CHEMICAL MARKETS

THE BUSINESS MAGAZINE OF CHEMICAL INDUSTRIES

VOLUME XXXIII SEPTEMBER, 1933 NUMBER 3

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CHEMICAL MARKETS is published monthly by Chemical Markets, Inc. WILLIAMS HAYNES, *President;* H. H. ADAMS, *Vice-President;* WILLIAM F. GEORGE, *Secretary-Treasurer.*

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CHEMICAL MARKETS

VOLUME XXXIII NUMBER 3

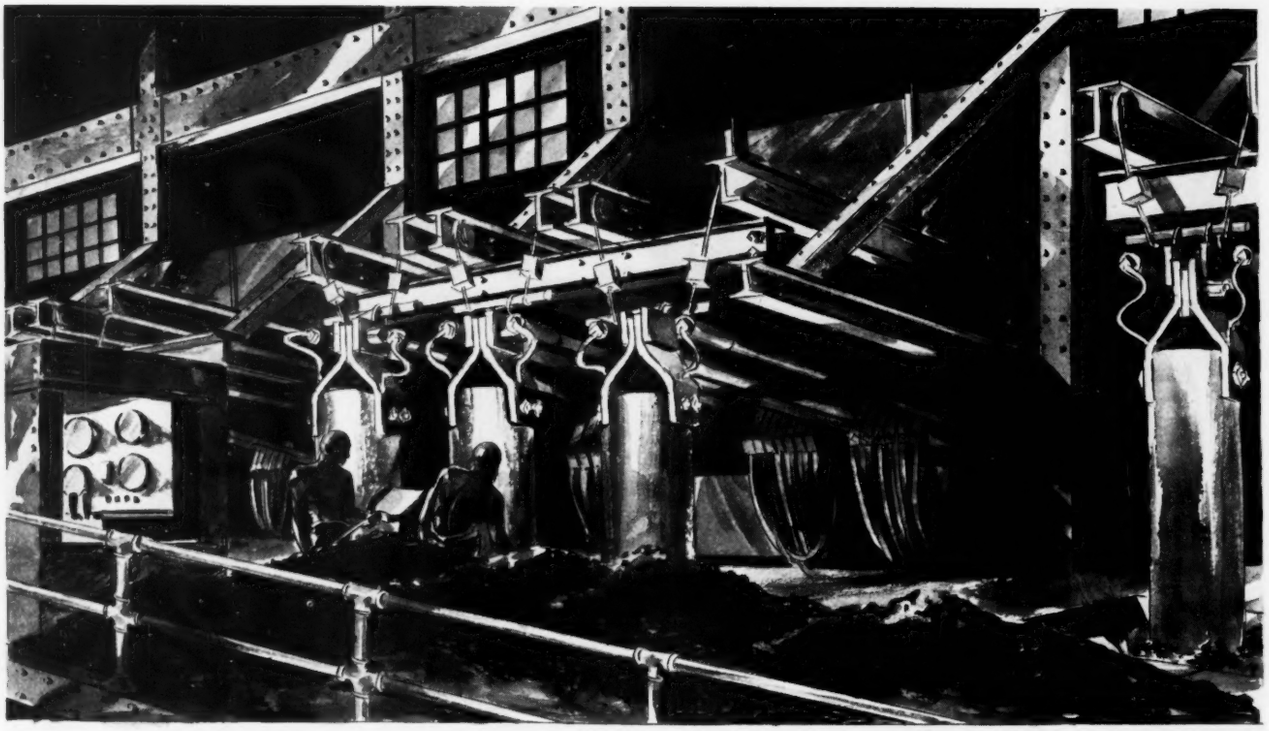
Controlled or Planned

GENERAL JOHNSON has intimated at several hearings that once the pressing matter of re-employment is well in hand, N. R. A. will then vigorously take up the conditions surrounding competition. He is adamant against price fixing by the industries; but he professes a lively and sympathetic interest in trade practices that are discriminating against buyers and unfair to competitors.

To many this seems but a tardy, half-hearted return to the promises held out to industry when the Industrial Recovery Act was originally proposed. In a literal sense this is doubtless true, nevertheless it is a wise position for N. R. A. to take and one that eventually will be beneficial to business.

Laissez-faire, in the narrower meaning of unrestricted competition, is dead. But supply and demand still function. Never in all economic history have there been so many, so different, and so powerful attempts to control competition by price fixing, by restricted output, by allocated markets as we have seen in recent years. Without exception all these controls, as Copeland has shown plainly in his recent analysis of raw material prices, have failed dismally. Our own Government can exercise a potent economic influence, but its experience with wheat and cotton has been a costly disaster, and the recent effort --- yet unproved --- is admittedly a desperate and uneconomic move to meet an emergency. Copper was pegged at 18c during all 1929-30; in July, 1930, it sold at 5c. The Stevenson restriction plan raised the price of rubber from 23.9c to $1.03 in July, 1925; in June, 1931, rubber sold for 2.7c. Brazil controlled coffee and the price dropped from 16.6c in 1928 to 6.1c in 1931. International cartels controlled zinc and tin: the average 1928 price of the former metal was 6.78c and in May, 1932, 2.52c, while when the tin control was established the price was 27c and when control was abandoned it was 19.24c.

So the record runs. It should teach us to be very wary of control of prices by governments or by industrial agreement. We commend to thoughtful consideration General Johnson's words: "If we control unfair trade practices, prices will take care of themselves."



....Out of the clean white heat of the electric furnace

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- Di Calcium Phosphate
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SWANN RESEARCH — TO FIND A BETTER WAY

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BIRMINGHAM

Division of THE SWANN CORPORATION

District Offices: CHARLOTTE, CLEVELAND, NEW YORK, DALLAS, SAINT LOUIS

Hours in the Chemical Plant A thirty-six and as often as possible a thirty-hour-week becomes clearer and clearer as the objective of Washington in the program of industrial rehabilitation. In any continuous process operation this is going to increase the problems always associated with turn-over from one operating crew to another. This is the high point of trouble, and always a brake upon production. Experience so far seems to indicate, from the point of view of operating economy, four eight-hour shifts a week are better than even six six hour shifts, and it obviously speeds employment.

The five day-week solution of the shorter hours problem creates an entirely different set of problems connected with a shut down of 63 hours as against the old week-end of 44 hours. Emergency maintenance here looms large and one of the most satisfactory answers has been found by keeping a skeleton maintenance crew working every other week-end.

Will Gasoline Follow Nitrogen? Are we on the threshold of another "nitrogen situation," this time in petroleum? On July 17 the British Parliament took a radical step in hydrogenation by guaranteeing a preference of 4d. per gallon for light hydrocarbon oils (as defined in the Finance Act, 1928) manufactured from indigenous coal, shale, and peat. The guarantee period is for ten years, and simultaneously the Imperial Chemical Industries announced that it will start immediately the erection of a plant capable of turning out 30,000,000 gallons of gasoline (petrol) a year.

Hydrogenation has received special attention in England for the past few years. A maritime nation, possessing the largest navy in the world, she is also endowed with tremendous coal resources and England's industrial supremacy in the eighteenth and nineteenth centuries was to a great extent due to these reserves. The past decade has seen the rise of petroleum and the corresponding decline in the importance of coal. If British chemists could but turn the latter into the former—such sleight of hand, it is felt, would go far in re-establishing the British industrial position.

The I. C. I. through its agreement with the I. G. has had several years in which to turn the Bergius process into the channels best fitted for its needs, yet, it is but a short while past that the announcement was made that the company had no intention of going into the production of gasoline on a commercial scale. Quite plainly the tariff protection now afforded changes the outlook more to the I. C. I. directorate's liking.

It is of interest to note that the proposed plant will deal, however, with only one-quarter of one per cent. of the annual British output of coal and a plant for the manufacture of 100,000 tons annually of petrol represents but one-thirtieth of the British petrol imports. Clearly the proposed plant is just a beginning on the hydrogenation highway.

In a word the plant is expected to cost at least £2,500,000, which at the current rate of exchange is about $12,000,000. The I. C. I. is said to have spent over £1,000,000 in research on large-scale development. The new Billingham plant will eclipse any now erected in this country and quite likely the I. G. plant as well.

Petroleum is almost as important in war as nitrogen. While no single country has a monopoly of crude petroleum, as Chile had on nitrate, nevertheless several of the large powers do not control basic points of production. If these follow Britain's lead, the petroleum situation is likely to change radically, and that means, as far as producers can see now, from bad to worse.

It must not be forgotten, however, that England's needs are peculiarly different. Even the most conservative Britisher will agree that no lasting prosperity is possible without renewing the coal industry's former status, or somewhere near it. If the proposed huge Billingham hydrogenation plant does that, quite likely the British motorist will not kick too strongly at higher petrol prices. But can you imagine the blast from Detroit were the proposal made here? We may be annihilating space rapidly, but in many ways economic problems have changed very little. Trans-Atlantic flights by the carload, Economic Conferences by the boatload, to the contrary.

Competition Among the Consultants British chemical circles have been debating with greatest frankness a nasty little group of evils that have clustered about the practice of the professions of the chemical consultant. The same problems have been warmly discussed here; but except for the article we published last January by Paul Mahler, the talk has been mostly behind closed doors. This has helped clarify opinions and crystallize beliefs; but it leads nowhere definite, and the conditions call for some positive corrective measures. Like the matter of crooks and cranks, to which we called attention month before last, unfair competition among the consultants deserves the

serious attention of some of our technical societies.

The outstanding complaint is directed against chemical consulting services offered by men on the teaching staffs of our colleges and universities, who often employ students as assistants who use the laboratories and equipment of their institution, and who trade upon the prestige of their faculty titles. Many instances may be cited of professors whose income from fees and royalties is greater than from the chair they occupy, and the opportunity to do industrial work of this sort has been held forth on more than one occasion to induce good men to accept very low teaching salaries. The defense of all this is set upon the ground that this industrial work gives a teacher an invaluable contact with the workaday world and brings to the college laboratory something of the atmosphere of the industrial plant.

To the consultant who must rent his laboratory, buy his apparatus and reagents, hire assistants, and pay taxes, these arguments appear to be but an academic excuse for what is unfair competition. His road is a hard one at best, with the increase in plant laboratories and plant research staffs, and the great amount of professional engineering services now rendered free by the construction and equipment companies, and he feels keenly the competition from endowed or state supported rivals. As the independent consultant has admittedly a place of real service to chemical industries, his problems deserve the thoughtful, co-operative consideration of our industrialists, the equipment-makers, and university trustees.

Executive Responsibility The New Deal has brought to the surface many thoughts regarding our modern industrial organizations. Berle's sharp probe into the results of scattered, indifferent stockholders, concentrated financial control and administration of professional business executives who often neither own the company nor fix its financial policies, has stimulated, since the publication of his book "The Modern Corporation and Private Property," discussions as to the responsibilities of the administrative class in industry. Throughout all American life the tendency is notable to thrust responsibility downwards. Anciently, power of any kind carried with it responsibility for the acts of assistants and subordinates. Today everyone seeks to find some unimportant subordinate who should be made the scapegoat of mistakes or misdoings. The Satrap of the Persian Province, whose tax collectors appropriated imperial funds, did not live long enough to investigate his department. The Mayor of an American city, where graft is rampant, discharges an assistant clerk in the comptroller's office and reduces a couple of police sergeants to the ranks, then runs for re-election as a reformer.

We have the same habits in industrial corporations. But the mere fact that the absentee owner, the stockholder, is becoming curious, and our legislators are seeking to protect his interest, indicates that this question of corporation control is bound to receive a great deal of attention during the next few years. The thought that the major executive should be held responsible for the acts of his subordinates and the results of his department is rapidly growing in favor. In many companies this would be revolution quite comparable to any of the New Deal activities.

Quotation Marks

Profits are not a thing to be apologized for—they are to be fought for, as a matter of economic life or death. —*Paul T. Cherrington.*

Advertising is certain to be an important factor in the new industrial relationships under the terms of the National Recovery Act. In its effects, the law will bring to the fore the sales problems of the manufacturer and will emphasize the importance of an accurate knowledge of his markets.—*General Hugh S. Johnson.*

We now have liberalization of the anti-trust laws in the enactment of the Industrial Recovery Act. The price we are going to pay is industrial autonomy.—*The Paper Industry.*

The chief concern of an industry should be the place it occupies in the affairs of the public, and the way in which—both for its own welfare, and for the support and good will of the public—it fills that position.—*Tyler Turner.*

Fifteen Years Ago

From our issues of September, 1918

Fourth National Exposition of Chemical Industries held in Grand Central Palace, New York.

House of Commons votes £1,000,000 to be devoted to promoting the manufacture of aniline dyes in Great Britain.

Government will establish plant at Clinchfield, Va., for recovery of toluol, sulfate of ammonia, valuable oils and other by-products from bituminous coal by a new process of low temperature distillation.

National Ethyl Gas Co. incorporates at Rio de Janeiro for the manufacture of ethyl gas as a substitute for gasoline.

Central Chemical Co., Hagerstown, Md., increases capital from $200,000 to $600,000 for proposed extensions at its works.

Merger of British Dyes, Ltd., with Levinstein, Ltd., is proposed to shareholders of both companies.

NRA and the Chemical Industries

WITHIN the past thirty days the tremendous task of marshalling the ranks of American industry has moved forward apace. Industry has done its part nobly; the Washington bound mailbags are filled with tentative codes.

Chemical and allied industries can boast of their cooperation. In July the Chemical Alliance charter was dusted off and the organization revived to act as an all-embracing body for the many diverse divisions of the industry.

The representatives of the Chemical Alliance who were in Washington on August 25 for the first formal conference on the Code for the chemical industry included, besides the President of the Alliance, William B. Bell, and the chairman of the Code Committee, Lammot du Pont, the following: E. M. Allen, Charles Belknap, Geo. F. Handel, Glenn Haskell, George Merck, J. W. McLaughlin and E. H. Westlake.

The following NRA officials were present: Major-General C. C. Williams, deputy administrator, F. J. Patchell, Major Chas. R. Baxter and Lieutenant A. Battley, assistants to the Administrator, C. L. Heyniger, Industrial Advisory Board, H. F. Fraser, Consumers' Advisory Board; Rowland S. H. Dyer, legal advisor; Boris B. Shishkin, Labor Advisory Board, and Marjorie R. Clark, Labor Advisory Board.

Hearing occupied the entire day, the Code being discussed paragraph by paragraph. A number of changes were suggested by members of the industry and by the NRA officials. A number of these have been embodied in a revised draft.

In addition to these changes several suggestions were made by Administration officials which have not been embodied in the revised Code. These are briefly summarized as follows:

1. That the Code should contain a clause providing for overtime payment.

2. That a clause should be added concerning the adjustment of wages for (a) those employees receiving more than the minimum rates; (b) those employees whose weekly earnings be unduly affected by a reduction in hours of work.

3. That Article IX be eliminated. Article IX reads as follows:

Nothing in this Code shall be interpreted in such manner as to impair in any particular the constitutional rights of the employee and employer to bargain individually or collectively as may be mutually satisfactory to them, and nothing in this Code shall prevent the selection, retention or advancement of any employee on the basis of his individual merit without regard to his affiliation with any labor or employee organization.

4. That Article XIII should be eliminated. This provision reads as follows:

By presenting this Code, and the specific provisions of Articles II and III hereof, those who have assented hereto shall not be bound by any modification thereof, except as each shall thereto subsequently agree.

5. The last article of the code (Article XIV) met with disapproval from Administration officials also. It read as follows:

The provisions of this Code shall expire on December 31, 1933, or on the earliest date prior thereto on which the President shall by proclamation, or the Congress shall by Joint Resolution, declare that the emergency recognized by Title I of the National Industrial Recovery Act has ended.

Well over 200 chemical firms have already subscribed to the Chemical Alliance Code and the number is increasing very rapidly. Officials of the Alliance when they meet with NRA officials in the public hearing now scheduled for September 14 at 10 A. M. in the Caucus Room of the old House of Representatives Office Building in Washington, will represent the overwhelming majority of the industry.

Attempts will be made before the public hearing to iron out the differences of opinion between the Alliance officials and the Administration on the points as outlined. It is more than likely that a second informal meeting may be held prior to September 14. Unless these differences are amicably settled at such a meeting they will undoubtedly come before the open hearing.

Most of the changes in the revised code (August 25) are ones in detail and involve no real fundamental differences from the first one submitted, aside from recognizing the necessity of differentiating on labor rates in the North and South. Article I has been completely rewritten and in its present form now reads as follows:

(a) The term "President" as used herein means the President of the United States.

(b) The term "Administrator" as used herein means the duly appointed representative of the President to administer the National Recovery Act.

(c) The term "Chemical Industry" as used herein shall be construed to include all manufacturers of chemical products covered by this Code, and any subsidiary companies which conduct manufacturing operations, or perform services, in conjunction with the chemical manufacturing operations of parent companies.

(d) The term "Alliance" as used herein means The Chemical Alliance, Inc., a non-profit-sharing corporation organized and existing under the laws of the State of Connecticut. A copy of the Constitution and By-Laws of said corporation is attached hereto marked "Appendix A."

(e) The term "employees" as used herein means all persons employed in any phase of the Chemical Industry by this Code.

Under hours of labor in Article II the term "including accounting, clerical, office and sales employees" has been added. In paragraph (a) of this article dealing with those exempted from the provisions of the code such as executives, etc., specific mention is so made of skilled operating labor as to bring this class specifically within the provisions.

In paragraphs (b) and (c) of the original draft the term 10 per cent. has been dropped in favor of the specific hours (44).

Article III dealing with minimum wages has been entirely revamped largely to make adequate provisions for southern wage scales being uniformly below those in the North. It now reads as follows:

On and after the effective date the minimum wages paid by any employer in the Chemical Industry to any employee, including accounting, clerical, office and sales employees, shall not be less than thirty-five cents per hour when employed in the Southern District as defined below, nor less than forty cents per hour when employed elsewhere in the United States; provided, however, that if the hourly rate for the same class of work on July 15, 1929, was less than thirty-five cents per hour in the Southern District or less than forty cents per hour elsewhere in the United States, then in that case the minimum wages paid hereunder shall be not less than twenty-five cents per hour in the Southern District and thirty cents per hour elsewhere in the United States; provided, however, that where a State law provides a higher minimum wage, no person employed within that State shall be paid a wage below that required by such State law. The above provisions shall apply in all cases except that

(a) Apprentices and learners shall be paid not less than eighty per cent. of the minimum wages above provided and the total number of apprentices and learners shall not exceed five per cent. of the total number of employees employed by any employer subject to this Code; provided, however, that any such employees shall be paid not less than the minimum wages above provided after one year of employment.

(b) Employees who because of age or infirmities are employed in such positions as watchmen, gatemen, caretakers, etc., shall be paid not less than eighty per cent. of the minimum wages hereinbefore provided and the total number of such employees shall not exceed five per cent. of the total number of employees employed by any employer subject to the Code.

(c) The minimum pay for a type of transient common labor employed intermittently by the Potash Industry near Carlsbad, New Mexico, not exceeding 125 individuals at any one time,

ASSOCIATION

Product	*Name*	*Association President*	*Secretary*
Carbon Black	National Gas Products Association	———	Reid L. Carr
Chemicals	Chemical Alliance	William B. Bell, President, American Cyanamid	W. N. Watson
Chemical Distributors	Institute of Chemical Distribution	———	Williams Haynes, Temp. Sec.
Chemical Equipment	Chemical Engineering Equipment Institute	H. D. Miles, President J. P. Devine	D. H. Killeffer
Chemical Specialties	National Association of Specialty Manufacturers	John Kelly, Nacto Corp.	Fostor Dee Snell
Chemical Specialties (Maryland)	Manufacturers & Distributors of Sanitary Chemical Specialties of Maryland	James F. Beatty Solarine Co.	E. H. Goldstone
Chemicals, Synthetic, Organic, Aromatics	Synthetic, Organic Chemical Mfrs. Association	August Merz, Calco Chemical Company	Charles Mace
Chromium Platers	Chromium Platers Guild	———	Walter Plumacher
Clay	American Clay Association	George C. Crossley, President United Clay Mines Inc.	George A. Fernley
Consulting Chemists	Association of Consulting Chemists & Chemical Engineers	S. S. Sadtler	Paul Mahler
Drugs	Drug Institute of America	Wheeler Sammons, Managing Director	H. Lawrence Groves
Dry Colors	Dry Colors Mfrs'. Association	———	Frank Muir
Dry Ice	Dryice Industry, Inc.	———	———
Exterminators	Exterminating & Fumigating Service Industry of the Metropolitan Area of N. Y. C.	William O. Buettner, 3019 Fort Hamilton Pway, Bklyn, N. Y	———
Fertilizers	National Fertilizer Association	John J. Watson International Agr. Chemical Co.	Charles J. Brand
Glue & Gelatin	Edible Gelatin Society of America & National Association of Glue Mfrs.	———	H. B. Sweatt
Greases	National Lubricating Grease Mfrs' Association	———	Guy Peters
Insecticides & Disinfectants	National Association of Insecticide & Disinfectant Manufacturers	Peter Dougan, Merck & Co.	Harry W. Cole
Insecticides & Fungicides	Subcommittee of Manufacturing Chemists Asso.	Ernest. T. Trigg, Com. Ch'rm'n	W. N. Watson
Laundry, *Dyeing & Cleaning Supplies	Laundry & Cleaners Allied Trades Association	———	———
Lime	National Lime Association	———	W. V. Brumbaugh
Manganese	American Manganese Producers Association	———	Harold A. Pumpelly
Mercury	National Quicksilver Association	H. W. Klipstein	Irving Ballard
Molders	As a section of NEMA	George Scribner Boonton Molding Co.	J. B. Neal
Naval Stores Distributors	———	———	See Code Chairman
Naval Stores Producers	———	———	See Code Chairman
Oils Fish	Sardine & Menhaden Oil Institute	Werner G. Smith, President, Werner G. Smith Co.	Ernest Montcrieff
Oil Linseed	National Linseed Oil Mfrs. Association	Howard Kellogg, President, Spencer, Kellogg & Co.	E. C. Bisbee
Oils Sulfonated	Sulfonated Oil Mfrs. Association	C. G. Gulick, President Nat. Oil Products Co.	Harold B. Sweatt
Paints, Varnish, Lacquers	American Paint & Varnish Mfrs'. Association	———	T. J. McFadden
Pharmaceutical & Biological Industry	American Drug Mfrs.' Association & American Pharmaceutical Association	———	Carson P. Frailey
Plastics Fabricators	Plastics Fabricators' Association	H. I. Hill, Celluloid Corp.	John E. Walker
Plastics Materials	Plastics Manufacturers' Association	A. E. Pitcher, Pres. Du Pont Viscoloid Co.	John E. Walker
Salt	Salt Producers Association	———	Frank Morse
Scientific Apparatus	Scientific Apparatus Manufacturers of America	Richard P. Brown	J. M. Roberts
Shellac Cutters	Committee of Five in New England	———	See Code Chairman
Soap-Product Groups are being organized	American Soap-Glycerine Producers	———	R. C. Edlund
Tanning Extracts	American Tanning Extract Association	Alan G. Goldsmith, President, Mead Sales Co.	Robert W. Griffith

*Code for dyes to be drafted later.

shall be not less than the maximum wage paid for such labor by the Agricultural Industry in the same general locality.

In the case of any employee whose compensation is paid on other than an hourly basis or is based upon a measure other than time, the total compensation paid shall be no less than such employee would be entitled to receive if his compensation were determined on an hourly basis.

For the purpose of this Article "Southern District" shall be defined as that territory south of the States of Maryland, West Virginia, Kentucky and Missouri, and including the States of Oklahoma and Texas.

The remaining articles of the original draft remain practically unaltered in the new draft.

S. O. C. M. A. Holds Code Meeting

The Synthetic Organic Chemical Manufacturers' Association met August 7 in New York City and generally approved the basic Alliance code. H. R. Houston, a Bell aide, addressed the meeting. The synthetic aromatic group under the leadership of E. H. Kilheffer (du Pont) drew up a supplemental code for the synthetic aromatic group and indications are that the dye group will do likewise. The alcohol producers have indicated that they will dwell for the present under the Alliance tent.

A glance at the accompanying summary indicates at once the widespread response to the President's plea for industry cooperation from the various groups within the so-called chemical field. The information given is not complete as secrecy surrounds some group activities but it shows the extent of cooperation. This bird's-eye view of what has so far been accomplished gives information to those wishing to make contacts either for information or to subscribe to tentatively adopted codes. It also indicates the extreme complexity of the chemical picture.

Some groups have pushed ahead faster than others. Some are only taking the first organization steps. Late in August the chemical equipment producers formally entered the NRA picture, as described elsewhere, and the chemical distributors are now orientating themselves in the right spot within the sheltering wing of the Alliance. While the Alliance has reserved membership strictly to actual chemical producers, some suitable cooperative arrangement may be worked out for allied industries. As this is written over five hundred invitations have been extended to the jobbers of the country to meet at the Chemists' Club (New York) September 8 to affect permanent organization of an Institute of Chemical Distribution and to formulate a code.

The following procedure is necessary where protests are filed against codes.

(1) A written or telegraphic request for an opportunity to be heard must be filed.

(2) Such request shall state the name of (a) any person seeking to testify in the hearing, and (b) the persons or groups whom he represents.

(3) Such request shall contain a statement setting forth without argument, a proposal: (1) for the elimination of a specific provision of the Code; or (2) a modification of a specific provision, in language proposed by the witness, or (3) a provision to be added to the code in language proposed by the witness.

(4) At the public hearings, all persons are regarded as witnesses, and shall present orally facts only and not argument. Written briefs or arguments may be filed, but oral presentations will be confined to factual statements only.

(5) In the discretion of the Deputy Administrator in charge of the Hearing, persons who have not complied with the requirements of paragraph (1), above, may be permitted at any time

Address	*Code Submitted and Adopted*	*Code Committee Chairman*	*Maximum Hours of Labor*	*Minimum Wages*
———	August 23	———	48	40-50c an hour dep nding location
535-5th ave., N. Y. C.	Filed	Lammot du Pont	40	40c an hour, lower in South
25 Spruce st., N. Y. C.	Under discussion	———	———	Not made public
50 E. 41 st., N. Y. C.	Under discussion	S. F. Spangler	———	———
130 Clinton St., Brooklyn	———	———	———	———
123 So. Charles st., Baltimore	Filed	———	40	$14.00 a week, 35c per hour for men; 30c women
260 W. Bway, N. Y. C.	August 7 a	E. H. Killheffer	———	Follows Chemical Alliance Code on Wages and Hours
344 E. 59 st., N. Y. C.	Being drafted	———	———	———
505 Arch st., Phila.	Filed, June 19	———	———	———
415 Lexington ave., N. Y. C.	August 6	———	40	$15 a week in all but Southeastern States where it will be $12
Washington D. C.	Filed	———	———	———
———	Filed	———	40	30-40c an hour depending upon location and size of city
———	———	———	———	———
———	Filed	William O. Buettner	44	$18 to $21 a week
616 Investment Bldg., Wash., D. C.	Hearing Sept. 6	John J. Watson	40	35c N. Area; 25c at port; 20c interior Southern points; 35c Midwest; 40c Pacific Coast
55 W. 42 st., N. Y. C.	Filed	———	———	———
% Oil Kraft, Inc., Cincinnati, Ohio	Filed, July 12	———	———	———
Holbrook, Mass.	Sub. to Membership	Dr. Robert C. White	40	$12 to $15 depending upon size of city
393-7 ave., N. Y. C.	Drafted	———	———	40c an hour Minimum $14 a week
427-15 st N. W., Wash., D. C.	Filed, August 5	———	40	35c North; 25c South
302 Metropolitan Bank Bldg., Wash., D. C.	August 10 a	———	40	35c Western & Northern States; 30c Southern
Washington, D. C.	Sub. to Industry Aug. 22	J. B. Cary, Niagara Sprayer	———	———
San Francisco	Filed	———	40	$15 North & West; $9 So. on Mexican Labor
Norton Labs., Waterbury, Conn.	Under discussion	———	36	Comes under Nat. Elect. Mfrs' Asso. Code
Antwerp Naval Stores Co., Savannah, Ga.	Drafted but not submitted	Porter A. Mackall Antwerp Naval Stores Co.	Not made public	Not made public
H. M. Wilson Turp. & Rosin Factors, Jacksonville, Fla.	Being drafted	H. M. Wilson	———	———
205 E. 42 st., N. Y. C.	Filed	———	———	———
532 Bankers Trust Bldg., Phila.	———	———	———	———
55 W. 42 St., N. Y. C.	Filed, August 20	———	———	———
2201 N. Y. Ave., N. W., Wash., D. C.	Filed, August 1	Ernest T. Trigg	40	30-40c depending upon conditions outlined in Code
506 Albee Bldg., Wash., D. C.	Filed, August 24	———	40	35c an hour
1001-15 st., N. W., Wash. D. C.	Not yet filed	———	———	———
1001 15 st., N. W., Wash., D. C.	———	———	———	Will operate as a subdivision of Chemical Alliance
7310 Woodward, Ave., Detroit	Hearing, August 15, before R. B. Paddock	———	40	North 35c men, 32c women; South 30c men, 25c women
Central Scientific Co., Chicago, Ill.	August 3 a	———	———	———
Thomas C. Mee Co., Woonsocket, R. I.	Being drafted	Thomas C. Mee	———	———
145 E. 17 st., N. Y. C.	August 15, a	———	40	30c for light labor, others 40c an hour
% Champion Fibre Co., Canton, N. C.	Filed	Alan G. Goldsmith	48	30c in South; 40c an hour in North

a. Adopted

prior to the close of the Hearing to file written statements containing proposals for eliminations from, modifications of, or additions to the Code supported by pertinent information or argument. Such written statements must be condensed as much as possible.

Public Hearings are solely for the purpose of obtaining in the most direct manner the facts useful to the Administrator, and no arguments will be heard or considered at this time. Representation of interested parties by attorneys or specialists is permissible, but it is not to be regarded as necessary. Industry, workers and the consuming public will be represented by special advisors employed by the Government.

In most of their provisions the codes of chemical fields are all very much alike. Hours of labor and minimum wages, of course, show marked differences, the "teeth" in all of them lies in the fair practices section. Following summaries of these sections of the more important codes tentatively adopted in the past three weeks are not only of importance in their own sphere of action but also indicate interesting possibilities of contrast.

SYNTHETIC ORGANIC AROMATIC GROUP

II—Unfair Competition

(a) It shall be deemed a method of unfair competition, and a violation of this code, for any member of the industry:—

1. To make any concealed allowances, rebates or concessions in the form of unjustified adjustments of claims of purchasers in order to effect a reduction in price.

2. To accord to any purchaser terms for the delivery of goods, which are not accorded to other purchasers of the same goods in the same quantity in the same trade district, the intent or effect of such terms being a discrimination in price. It is not the intent of this paragraph to limit or prevent sales to dealers or jobbers at the customary trade discount.

3. In the event of a change in price of an individual product, to make any adjustment, allowance, credit or refund to any purchaser, the effect of which is to make a retroactive change in price, which discriminates in favor of such purchaser.

4. To guarantee or otherwise protect any purchaser against a decline in the price of any product.

5. To pay or allow (in the form of money or otherwise) rebates, refunds, credits or unearned discounts, the effect of which is to create price discrimination in favor of individual purchasers.

6. To make or promise, directly or indirectly, to any purchaser or prospective purchaser or to any officer, employee, agent or representative of such purchaser or prospective purchaser, any bribe, gratuity, gift or other payment or remuneration.

7. To procure intentionally from an employee of any member of the industry (unless with the consent of such member) any information concerning the business of such member, which is properly regarded by it as a trade secret or as confidential within its organization; or to induce any such employee to leave his employer for the purpose of obtaining such information.

8. To induce or attempt to induce by any means whatsoever a breach of a bona fide contract between a competitor and his customer.

(b) The making of incomplete or ambiguous contracts for the sale of synthetic aromatic chemicals shall be deemed a method of unfair competition. All contracts for the sale of synthetic aromatic chemicals shall specifically state the nature of the goods sold, price, quantity, quality, terms of payment, delivery and all other elements necessary for a complete contract, and no such contract shall specify a term or duration in excess of twelve (12) months. Contracts covering the sale of an estimated quantity of goods shall be so drawn as to oblige the purchaser to take at least 80 per cent. of such estimated quantity, and to oblige the seller to deliver not more than 120 per cent. of such quantity; and no contract shall be made to cover the requirements of the purchaser without stating an estimated quantity.

III—Administration

(a) The Synthetic Organic Chemical Manufacturers' Association is hereby designated as the agency for administering and supervising the provisions of this code, and to receive communications from the Administrator for National Recovery relating to the industry. The association shall, through its secretary, require the members of the industry to submit, from time to time, such information and data as it may deem necessary for the purpose of furnishing to the President of the United States such information and reports as he may request under the provisions of the National Recovery Act; provided further that if the data requested from any member is confidential in nature, the member shall have the privilege of submitting such data direct to the President or the Administrator for National Recovery.

(b) Any and all complaints which may arise between members of the code concerning any violation of any part of the code shall be filed with the secretary, who shall direct the interested parties to designate an arbitrator who shall then hear the complaint and render a decision that shall be binding upon the interested parties. If the interested parties are unable to agree upon an arbitrator within ten (10) days, the board of governors of the Synthetic Organic Chemical Manufacturers' Association shall designate an arbitrator.

CARBON BLACK

Article IV—Production

Each producer shall, insofar as is possible without infringing now existing obligations for the purchase of gas, so regulate its current production of all ordinary grades of carbon black as to prevent the same from exceeding its current deliveries. In case in any period of six calendar months the quantity of such black held in storage by any producer shall increase (except through purchase of black or unavoidable purchase of gas) such producer shall reduce its storage pro tanto during the next six calendar months, and failure so to do shall be deemed an unfair method of competition within the meaning of the National Industrial Recovery Act.

The present capacity of carbon black factories of the United States as a whole, is in excess of present or any prospective needs. Therefore it will be considered a violation of this code to make any material increase in the plant capacity of the industry, during the life of the National Industrial Recovery Act.

Article V—Price

Each producer shall, on September 6, 1933, or on such later date as the emergency national committee shall designate, file with the secretary of said committee a statement of the minimum price to customers thereafter to be quoted by it for the ordinary grades of carbon black sold by it. No producer shall make or quote any price lower than that filed until five days after filing with the secretary of the committee a new minimum price; nor shall any producer or its agent offer or grant any terms, inducements, rebates, or conditions having the effect of reducing the cost to the customer below its minimum price at the time in effect hereunder; nor shall any producer or its agent suggest, intimate, or promise to a customer at any time a future price below such minimum price. The secretary shall immediately notify each producer, by telegraph and by letter, of all initial minimum prices filed and of all price changes thereafter made by any producer.

If the initial minimum price filed by any producer shall be lower than that filed by another producer, such other producer shall have the right to reduce its price to the lower rate by notification to the secretary of the committee effective immediately. And upon any existing price being reduced by any producer, upon five days' notice as hereinbefore provided, any other producer shall be at liberty to adopt said new minimum price as its own as soon as the same shall become effective, and such producer shall give the secretary written notice of its adoption of said new minimum price at or before the time such action is taken.

The foregoing provisions of this article are subject to the following exceptions:—

(a) In making sales of carbon black to another concern which is bound by the provisions of this code, a producer may allow any discount it may see fit.

(b) In making sales to a jobber, a producer may allow a discount not exceeding 5 per cent.

(c) Sales of carbon black below standard quality may be made at any price or prices authorized by the emergency national committee.

Any violation of this article shall be deemed an unfair competitive practice.

The provisions of this article shall not apply to contracts for 1933 delivery made prior to the effective date of this code.

SOAP

II

To further effectuate the policies of the Act, the Board of Directors of the Association is set up to cooperate with the President as a Planning and Fair Practice Agency for the Soap and Glycerine Industry, and the President is invited to name three members to sit with this agency without vote whenever it shall act in the capacity herein indicated. This Agency shall take the lead in making effective in the Soap and Glycerine industry all provisions of this Code, and may serve in developing for all branches of the Soap and Glycerine industry and/or related detergent, or cleanser industries supplemental agreements to be submitted from time to time for the approval of the President. "Product divisions or geographical sections of the Association may establish their own Planning and Fair Practice Agencies and each such agency, subject to proper review by the Board of Directors, shall be self-governing in respect of all conditions and problems relating exclusively to said division or section, provided however that the three representatives of the President upon the Planning and Fair Practice Agency of the industry or other similar representative of the President shall be invited to meet regularly with any such divisional or sectional Agency, and provided further that no supplemental agreements, codes, or other action of any such Agency shall be inconsistent with the purposes and policies of the Association, of the Act, or of this Code."

XIII

To accomplish the purposes of the Act and of this Code it shall be an unfair method of competition to sell below cost. Under direction of the Planning and Fair Practice Agencies or Agencies constituted above (Article XII) studies shall be made of costs in an effort to determine fair and uniform procedures for the soap and glycerine industry and/or related detergent or cleanser industries.

XIV

To aid the Planning and Fair Practice Agency or agencies in making effective the purposes of this Code and the policies declared in the Act, every manufacturer shall supply promptly to such agent as may be designated reports and other data pertinent to the Act and this Code.

INSECTICIDES & DISINFECTANTS

On and after the effective date of this code, manufacturers and wholesalers shall abide by the following standards of practices in marketing and selling household and live stock insecticides, disinfectants, dips and deodorants.

VI—Free Goods

(a) No Insecticide or Disinfectant Manufacturer or Wholesaler shall offer or give a free deal. The term "free deal," as used in this paragraph means the gift of a product to a trade buyer conditioned upon his purchase of a product. Nor shall any manufacturer or wholesaler give free goods for distribution purposes.

Cooperative Advertising and Free Goods for Display

(b) No manufacturer or jobber shall pay a trade buyer for a special advertising or distribution service by such buyer (a) except in pursuance of a written contract made in good faith and explicitly defining the service to be rendered and the payment for it and (b) unless such service is duly rendered and payment is reasonable and not excessive in amount. Such payment is reasonable in amount if in the case of a printed advertisement, the payment does not exceed the actual cost of the advertisement, calculated on a lineage basis which shall at no time exceed the actual rate paid and in no case shall exceed the cost of advertising on a lineage basis as set forth in the current national rate and data book. But no such payment shall be made for a counter or shelf or floor or window display.

VII—Published List Prices

(a) Each manufacturer and each wholesaler shall sell on the basis of "published list prices" (1) which are uniform to all trade buyers of the same quantity located in the same competitive market and (2) which shall be strictly adhered to, while such prices are effective.

(b) The term "Published List Prices" as used in this article, means a price list (1) which is published or available for the equal information of all trade buyers alike located in the same competitive market and (2) which states all the sellers prevailing terms of sale.

(c) This requirement includes any indirect price concession through a rebate or allowance or commission or refund or payment or deal or by any other means whatsoever.

(d) No manufacturer or wholesaler shall offer or make a quantity price unless it is a genuine quantity price. The term "genuine quantity price" as used in this article, means a price differential (1) which is based upon a substantial difference in the quantity sold and delivered and a resulting substantial cost saving in freight and handling and (2) which is reasonably proportionate in amount to that saving, nor shall any manufacturer or wholesaler sell on a basis of guaranteed sale, consignment sale, or on any bill-back, or charge-back arrangement whatsoever.

VIII—No Sales Below Cost

(1) No manufacturer or wholesaler shall sell or offer for sale any insecticide or disinfectant below the reasonable cost of production of merchandise of minimum standard, plus freight to destination.

(2) Such reasonable cost as used herein is defined to include the current delivered market cost of raw materials and supplies; fair wages for employees not inconsistent with the provisions of this Code; and a reasonable standard allowance for each Division and/or Product Group of the Industry for the following: power, light, heat, water and other miscellaneous operating expenses; repairs and maintenance of buildings and equipment; executive, supervisory, engineering, experimental and development, sales and office salaries and expenses; advertising and promotional expense; distribution and delivery expense; rent; professional and collection expenses; bad debt losses, adequate depreciation and obsolescence of all buildings and equipment at rates agreed upon; and incidental to the manufacture and sale of such products. Initial standard allowances for the above items of cost shall be established by the Code Enforcement Committee of the National Association of Insecticide and Disinfectant Manufacturers, Inc., with the approval of the President and shall become effective when established and published. The Code Enforcement Committee shall, subject to the approval of the President, have the power to revise such standards from time to time and may require from members whatever information may be needed for this purpose.

(3) Where a manufacturer produces more than one line of products, each line shall be considered a separate unit for purposes of ascertaining costs, and general expenses of all kinds shall be properly and fairly allocated to the several lines. A uniform cost accounting system shall be adopted as soon as practicable, becoming effective upon approval by the Code Enforcement Committee, and such system shall be used by all manufacturers who are members of the Insecticide and/or Disinfectant group in allocating the above items of cost to specific products.

(4) Chains maintaining warehouses and giving warehouse facilities to their retail outlets may purchase on the basis of wholesalers as outlined in the published price lists, provided he purchase the wholesale quantity, but at no time shall a retailer be extended the wholesalers price or discount; but must purchase only at the recognized retailers price.

11. No Insecticide or Disinfectant Manufacturer or Wholesaler shall use a false or deceptive label upon his product or a deceptive container for his product.

12. No Insecticide or Disinfectant Manufacturer or Wholesaler shall make or use any false or misleading advertisements of any kind or through any medium otherwise deceive the purchasing public.

13. No Insecticide or Disinfectant Manufacturer or Wholesaler shall defame a competitor by uttering false or disparaging statements about him or his merchandise or his business or shall unfairly interfere with his business by appropriating it in any respect or by espionage upon him or by unfairly enticing away his employees or by inducing a breach of his contract or by any other means.

14. No Insecticide or Disinfectant Manufacturer or Wholesaler shall pursue any practice which is offensive to good business morals or which is, for any other reason, unfair to competitors or detrimental to the purchasing and/or consuming public.

15. No Insecticide or Disinfectant Manufacturer or Wholesaler shall refuse to fill a genuine order duly accepted by him in the normal course of business nor shall he refuse to accept delivery of a genuine order given by him to the manufacturer.

16. No Insecticide or Disinfectant Manufacturer or Wholesaler shall mis-use his buying or selling power to exact or impose any uneconomic or unjust term or condition of sale.

17. No Insecticide or Disinfectant Manufacturer or Wholesaler shall require a buyer to purchase one product in order to purchase another.

18. No Insecticide or Disinfectant Manufacturer or Wholesaler shall deliberately substitute another product for that ordered from him in the normal course of his business.

19. No Insecticide or Disinfectant Manufacturer or Wholesaler shall offer or sell a product at or below its cost to him, prevent or suppress competition within or without a legitimate reason justifying such business action. The term "cost" as used in this paragraph means the production cost of the product plus a reasonable distribution charge.

20. No Insecticide or Disinfectant Manufacturer or Wholesaler shall offer for sale or supply any merchandise at prices less than the prevailing market f. o. b. point for wholesale distribution ten days prior to date of sale plus a reasonable mark-up to at least partially cover the cost of doing business which shall in no event be less than minimum mark-up of 3½%.

21. Cash Discount offered to induce prompt payment shall not enter into cost determination provided that any wholesaler may meet the price laws under this Code of any other dealer at wholesale.

22. No Insecticide or Disinfectant Manufacturer or Wholesaler shall either quote a fictitious price or a false price or make any price statement or representation or claim which is effective to mislead or deceive the purchaser, or to unfairly injure a competitor.

23. The President of the National Association of Insecticide and Disinfectant Manufacturers, Inc., shall appoint five members of the Insecticide and Disinfectant Industry subject, however, to the approval of the Board of Governors of the National Association of Insecticide and Disinfectant Manufacturers, Inc., to be known as the Code Enforcement Committee. In the event of the decease or retirement of any member of this Committee, the President shall, under the same condition, promptly appoint a member of the industry to fill the vacancy. Any employer may participate in this Code and in any revisions or additions thereto, and receive the benefits thereof, by accepting the proper pro rata share of the cost and responsibility of creating and administering it either by becoming a member of the National Association of Insecticide and Disinfectant Manufacturers, Inc., or by paying to it an amount equal to the dues from time to time provided to be paid by a member of the National Association of Insecticide and Disinfectant Manufacturers, Inc.

24. If the Code Enforcement Committee determines that in any branch or subdivision of the Insecticide and Disinfectant Industry it has been a generally recognized practice to sell a specified product on the basis of printed net price list, or price list with discount sheets and fixed terms of payment which are recognized by the trade, each manufacturer of such product shall, within ten days after notice of such determination, file with the Secretary of the National Association of Insecticide and Disinfectant Manufacturers, Inc., a net price list or a price list and discount sheet as the case may be therefore proposed by him showing his current prices or price and discount and terms of payment. Revised price lists with or without price lists sheets may be filed from time to time thereafter with the Association's Secretary by any manufacturer of such product to become effective upon the date specified therein but such price lists and discount sheets shall be filed with the Association's Secretary ten days in advance of the effective date unless the Code Enforcement Committee shall authorize a shorter period. If formal complaint is made to the National Association of Insecticide and Disinfectant Manufacturers, Inc., that the provisions of this Code have been violated by any employer, the Code Enforcement Committee shall investigate the facts and to that end may cause such examination or audit to be made as may be deemed necessary. In event of the complaint so investigated having proven unfounded or unjustified, the cost of such investigation shall be paid by the complainant; but if the investigation shall prove that the manufacturer whose practices were complained of, shall have been in fault, then said manufacturer shall pay for the costs of such investigation.

LIME

Lime industry's code sets forth a number of competitive conditions which have been found to exist in the industry to the detriment of the group. Lack of standardization is also mentioned as a disturbing factor. Considerable attention is given to the problem of cost, the element of labor, and selling below cost. Twenty-seven items are included in the section on unfair methods of competition.

With respect to contracts for the sale of chemical lime, the code provides:—

No contract shall be entered into to furnish lime or lime products to exceed a period of three months' duration, such periods to expire on the last day of March, June, September, and December.

Code sets up that supervision of the application of its provision is to be vested in the trades relations committee of the National Lime Association.

FERTILIZERS

Article on price provisions in the fertilizer code contains some noteworthy proposals for the maintenance of fair competition. Sales below reasonable cost are prohibited and The N. F. A. is authorized to prescribe a uniform accounting system.

Every fertilizer manufacturer is to file with the secretary of the Association a schedule of prices, terms, conditions, etc., and additional copies of the schedule are to be mailed to all competitors in the territories where the manufacturer does business. After the schedule is filed, all sales must be made at the scheduled prices.

In the event that any manufacturer desires to make a change in any price or prices on his schedule, he will notify the secretary of the Association of the changes which he desires to make, and at the same time send a similar notification to all other fertilizer manufacturers in his territory. No sales can be made on the new prices until three days after the filing of the new schedule, except that any schedule filed to meet a new schedule filed by a competitor may become effective on the same date and hour that the competitor's schedule becomes effective, providing notice was given to the secretary of the Association at least 48 hours in advance.

The secretary of the Association will keep all manufacturers in any particular fertilizer territory informed of any changes made in price schedules in that territory.

A uniform sales contract is to be prepared by the Recovery Committee, the use of which shall be binding on all manufacturers.

Every price quoted is to be the selling price to consumers, delivered to the consumers' farms.

Acetylene Carbon Black

By Charles Kaufmann
Shawinigan Chemicals, Limited

ACETYLENE black as its name implies, is a product of the decomposition of acetylene gas. While the high carbon content of acetylene has at an early date stimulated much experimental work with a view to its use as a source of carbon black (1) (2) (3) (4) (5) (6), yet the relatively high cost of the raw material combined with rapid development of the American natural gas black industry has retarded its development. Only comparatively recently have some of the special properties of acetylene black, not possessed by other carbon blacks, stimulated the resumption of this earlier work with the result that acetylene black is now being manufactured in Canada and in Germany on a commercial scale.

Manufacturing Processes

The first attempts to make carbon black from acetylene were made along the lines of the so-called channel process (3) which is at present extensively used in the manufacture of gas black. In this method the gas is partially burned in especially constructed burners the flames of which impinge on rotating disks, drums or moving channels on which the black collects. It is possible by this process to obtain an intensely black and very finely divided grade of carbon black, comparable in quality with the most expensive gas color black on the market. The high price of the raw material (acetylene) combined with the low yields obtained made this method up to the present impracticable and now no acetylene black seems to be made commercially by this process.

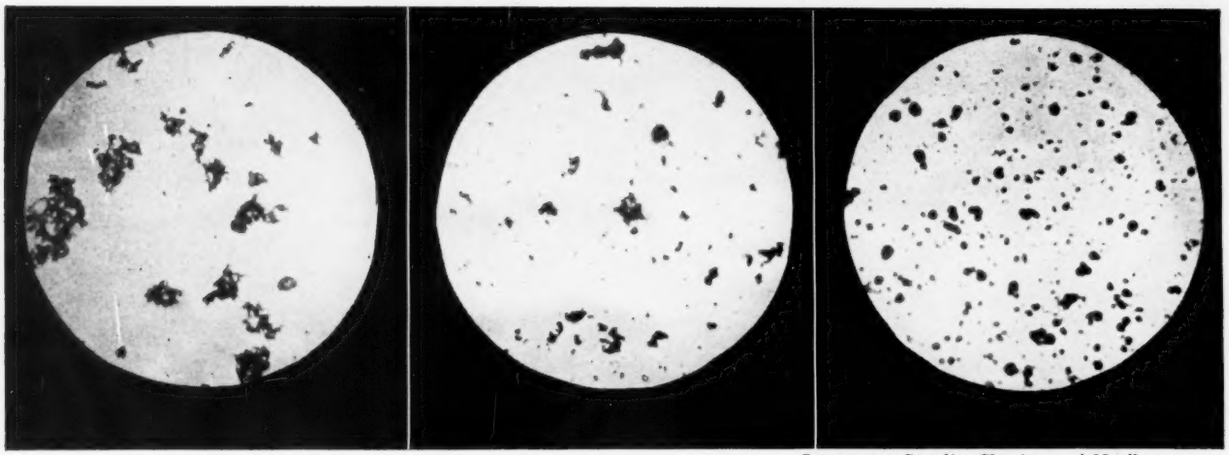
A second method of production of acetylene black has been proposed first by Hubou (3) and further developed by Frank and Caro (5) (6) and others. In this method use is made of the fact that acetylene under pressure of more than two atmospheres will propagate decomposition through the total volume if it is started in one place by an electric spark or other suitable means. The products are carbon and hydrogen both of which are recovered. The acetylene black resulting from this method is also of an intense dark color. Less, however, than the channel black. It is a finely divided and very pure carbon. The yields in this process were high but considerable mechanical difficulties have been encountered, most of which, however, seem to have been solved during the course of operation. Acetylene black is manufactured after this process by at least two firms in Germany and one in France. A detailed description of the method and most of the patents up to 1922 may be found in Vogel "Das Acetylene."

The third method is decomposition by purely thermic means.

In this process acetylene is decomposed into its constituents by bringing it to its decomposition temperature (800° C.).

Hydrogen and carbon are obtained, the latter in an extremely pure form above 99%. The color of the product is less intensely black than the former two, but the very voluminous material possesses other highly valuable characteristics, such as high mechanical absorption, small particle size and a relatively high electrical conductivity which will be dealt with later. At present considerable quantities of this black are produced yearly in Canada.

A further method which seems to have up to the present found no extensive commercial application is the decomposition of acetylene gas in the electric arc. Patents on this process have been taken out by the Firm Burger, Hamburg. It is not known, however, if any acetylene black is made commercially in this manner. In the production of acetylene from methane or coal gas by passing these gases through the electric arc, small quantities of carbon are obtained as a product which has many of the characteristics of acetylene black. As far as we know nothing of commercial dimensions has been developed along these lines, but Franz Fischer and his collaborators at the Kaiser Wilhelm Institute have been actively engaged in studying its possibilities.



Cuts courtesy Canadian Chemistry and Metallurgy

Thermal Acetylene Black
Diameter X 1000

Explosion Acetylene Black
Diameter X 1000

Channel Acetylene Black
Diameter X 1000

Note the chain structure best shown at 9 o'clock.

(*A*) *Physical.*

The carbon blacks obtained from acetylene vary in their properties according to the methods employed in their production. While acetylene blacks made by the channel process are related in most of their properties to the American gas blacks, those acetylene blacks made by thermal decomposition resemble more the high grade lamp blacks. Owing, however, to the high temperatures of their formation, properties of the thermal blacks approach those of finely divided graphite.

(1) Density.

The true density of acetylene blacks approaches that of graphite.

Thermal Acetylene Black: 2.05 (Van Rossem, Royal Dutch Rubber Research Labs.).

Explosion Acetylene Black: 1.89 (T. R. Dawson, Inst. of Rubber Industry).

Their apparent density, however, varies naturally according to their preparations and after-treatment. In the case of thermic acetylene black (Shawinigan Falls) the material as produced has a density of 0.016 (1 lb. per cu. ft.). However, by mechanical treatments (compression) this density is increased to 0.21 (12.5 lbs. per cu. ft.).

The explosion blacks and channel blacks have a slightly higher apparent density.

(2) Compressibility.

A peculiar property of thermic acetylene black (Shaw. black) which seems shared by none of the others is the fact that it seems impossible to densify the material by mechanical compression to more than 20 lbs. per cu. ft. Even if higher pressure up to 20,000 lbs. per square inch is applied the material will re-expand to the above value as soon as the pressure is released. The exact cause of this property is not definitely established, but it is supposed to be the effect of highly absorbed gases either in form of surface films or in capillaries in the black. The microscopic appearance would seem to point to the latter.

(3) Resistivity.

The resistivity of acetylene blacks is very low, especially so in the case of thermic decomposition blacks where the high temperatures at which the black is formed increase its graphitic character.

The contention that these blacks are very near to graphite is also substantiated by their X-ray patterns (10) and also by their true densities and lower heats of combustion (11).

Resistivity at 2,500 lbs. (square inch pressure).
Thermic acetylene black: 0.0464—0.035 ohms/inch^3
Explosion black : 0.0624—0.0564 " "
Channel Acetylene black: 0.2180—0.1400 " "
(See appended curves).

(4) Color Density. (Tinting Value).

The paint and lacquer industry is one of the chief markets for carbon blacks. Here the density of the color or in other words the blackness of the material is of greatest importance.

In this respect neither the thermic nor the explosion blacks equal the cheaper carbon blacks made from natural gas. Exceptions to this are acetylene blacks made by the channel process under special conditions which equal in color the best gas blacks on the market. A standard test in the paint industry is the so-called tinting value. This test consists in preparing a grey paint from weighed quantities of black, zinc oxide and linseed oil. By matching this paint to a standard sample and determining the amount of zinc oxide required, a figure is obtained which will give a comparative measure of different blacks. A special instrument called a nigrometer has been constructed to allow an absolute comparison of blacks.

Tinting values:	Thermic Black	100
	Explosion Black	130
	Channel Black	140

The undertone (that is the shade of the grey paint made from the blacks with zinc oxide) in thermal acetylene blacks is more blue than is the case with blacks made from natural gas.

(5) Particle Size.

The particle size of carbon blacks and its determination has received a great amount of attention in the last two decades. Numerous articles have been published especially since carbon black has found extensive application in rubber manufacture.

Most of this work, however, has been done on gas blacks made from natural gas. Several investigations have also included acetylene blacks. Unfortunately the origin of these blacks is given only in the cases of Shawinigan black.

(6) Microstructure.

Nothing has appeared in the literature about the microstructure of acetylene blacks. The data and pictures given here are taken from reports of the Shawinigan Chemicals Research Dept. The pictures are taken at 1,000 diameters. Owing to the small particle size of carbon blacks these pictures present by no means the actual particles but rather the mode of agglomerations typical for the acetylene blacks of different origin. A very remarkable difference between the blacks according to the means of their preparation may be observed. While the impingement blacks (channel blacks) show dense solid bodies, blacks made in the free space (gaseous phase) like explosion blacks and especially thermic blacks (Shaw. black) have a loose spongy structure. The same difference may be noticed also in blacks made from other sources, as for instance natural gas, which if made by the channel process has a smiliar structure to the acetylene black made in the same way, while lamp blacks made by sooty oil flames resemble more the thermic acetylene blacks.

Acetylene Carbon Black

That this difference in structure has also a considerable effect on other properties of the blacks, as for instance absorption and perhaps color density and compressibility, is proven by many experiments.

(7) Absorption. (Mechanical).

Closely connected with the structure of the blacks is the absorption for oil or water. This absorption is highest with the spongy thermic acetylene black, lowest with the channel blacks.

Thermal: 1 gr. of black absorbs 5.0 gr. linseed oil
Explosion: 1 gr. of black absorbs 3.7 gr. linseed oil
Channel: 1 gr. of black absorbs 2.18 gr. linseed oil

The mechanical absorption for oils or liquids is of importance in the use of the blacks in paint and lacquer, also in the rubber industry and in the employment as filler in liquid oxygen explosives.

(8) Wetability with Water.

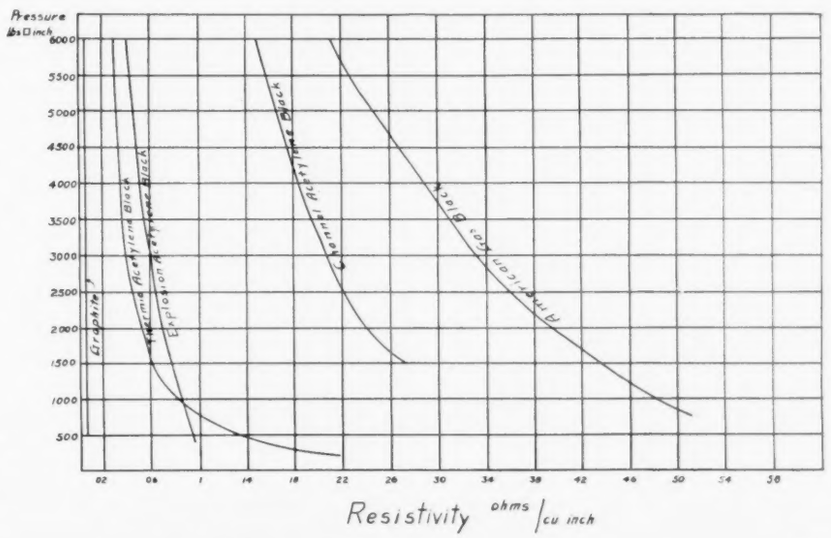
A so-far unexplained difference between the thermic blacks and explosion blacks on one side and the channel blacks on the other is their wetability with water. The latter will readily mix with water while the two former will not. Traces of inorganic or organic acids or better still of acetone, pyridine, etc., will overcome this resistance to wetting.

(*B*) *Chemical Properties.*

I.—Purity. According to their source all acetylene blacks have a high degree of purity seldom less than 95% C. as the raw material, acetylene, consists of carbon and hydrogen only. Impurities may consist of polymerization products of acetylene, namely benzene, naphthalene, anthracene, phenanthrene, etc., especially if the temperature of the formation has been low as is the case in channel blacks, or of mechanically introduced impurities like particles of iron, silica, etc.

	Moisture	*Volatile*	*Ether Extract*	*Ash*
Thermic	0.05%	1.3%	0.02%	0.04%
Explosion.....	0.06%	1.0%	0.05%	0.03%
Channel.....	0.38%	3%	0.6%	1%

II.—Resistance to combustion in air. None of the acetylene blacks if pure will, in spite of their fine division, sustain combustion if ignited with a spark or red metal. This is especially true of the highly graphitic thermic acetylene blacks. If, however, organic or inorganic impurities (dust) in greater quantities are present a slow glowing combustion results.



Acetylene black resistivity is very low, especially so in thermic decomposition blacks where high temperatures at which black is formed increase its graphitic character.

III.—Absorption. Different to the purely mechanical absorption of oil or liquids is the absorption capacity for acids, alkalies or salts from solution. All acetylene blacks, if not activated have a very low absorptive capacity and are also poor decolorizing agents. Activation with air or CO_2 improves this property but not to the same extent as is the case with charcoals.

The uses for acetylene blacks in general are the same as for other carbon blacks. The high cost of raw material, however, makes it very difficult at present to compete with the cheaply made gas blacks. This is especially the case in the printing ink, paint and lacquer industries, and with exception of special cases also in the rubber industry.

In these industries the price of black is of much greater importance than its quality. Several unique properties found especially in the thermic acetylene blacks make it possible for them in special applications not only to compete with the cheaper carbon blacks but actually to replace them completely. The largest of these cases is the manufacture of dry cells, for which yearly increasing quantities of thermic (Shaw.) black are used. The black is employed here in connection with pyrolusite ($Mn\ O_2$) and graphite for depolarizing purposes. Its special value in this case is the highly graphitic character, coupled with extreme porosity, enabling a high absorption for electrolyte (NH_4Cl solution). Another special market for the thermic black also founded on its absorptive capacity is as filler in liquid oxygen explosives, (such as LOX) where it competes successfully with cheaper materials, charcoal, cork fillings, etc. A special market for thermic acetylene black is in rubber goods where extremely high quality is required as for instance in racing tires.

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Safety First During Tank and Vat Cleaning

By R. H. Ferguson
Engineer, National Safety Council

Not so long ago the newspapers throughout the country carried the story of a catastrophe in an eastern plant. Five men lost their lives, as the result of one little error, while cleaning a tank which had contained poisonous chemicals. This particular accident, like others of which you have heard, could probably have been prevented if the proper instructions had been followed. It is not our purpose to discuss this case, but rather to present the experience of other organizations while carrying on similar operations and to tell of the accepted safe practices.

The first step to be taken, if such work is to be carried on safely and efficiently, is to select a foreman who thoroughly understands the hazards which may possibly be encountered. By such a move, intelligent supervision is practically assured and the men working under such a foreman will be properly instructed, not only in the fundamental operations but in the safe practices to be followed.

Naturally, attention should be given to the selection of the men who are to compose the cleaning crew or gang. This can be left to the foreman's judgment, but he should make sure that the men selected can understand his instructions and realize the importance and the possible hazards of the work at hand.

It is advisable that the workers know just what the previous content of the tank or vat was in order that working rules may be understood. Where the crew must work on tanks which have held various types of chemicals the instructions and methods to be followed often must be altered to fit the particular case.

Rules for Cleaning Operation

Of course, the container must be emptied before the cleaning operation can start. The general practice is then to "blank off" the lines delivering chemicals to the tank. This will prevent materials being run into the container while men are at work. Particular attention should be given bottom valves and drains that any possible error on the part of the operating force will not endanger the lives of the cleaning crew. In some cases, lines cannot be "blanked off." Here the valves may be locked, closed, and tagged with "hold cards" to prevent accidental opening. The former protection is to be preferred as a "blank" in the delivery line assures positive protection.

The tank should, of course, be gas free, that is, free of any gas which might create a possible hazard before men are permitted to enter. It is not always possible to free a container and consequently it is advisable to have available, breathing apparatus and other safety devices.

Proper breathing apparatus, such as canister or fresh air masks, is essential. So are body or safety belts and life lines. First, however, it should be understood that a canister mask is not ample protection in heavy concentrations of toxic gases. Canisters are available which afford protection against one particular gas, such as ammonia, but canisters may also be had for a number of gases in combination. The enclosure in which the man is working, must contain sufficient oxygen to support life or the wearer of the canister mask will be overcome. It must be remembered that as the man wearing a canister mask breathes, air is taken from the gaseous atmosphere around him and passed through the canister to the man. If all of the harmful gases are not removed then, of course, the worker will inhale them and the results may be serious.

Where knowledge of the gas concentrations is uncertain, it is advisable to employ the fresh air mask. By this device, fresh air, from an outside source, is delivered to the worker. This is accomplished by means of a blower operated usually by a member of the crew. This blower forces fresh air through a hose to the mask worn by the man in the tank.

When men must enter tanks or other hazardous enclosures it is advisable that safety belts, properly equipped with life lines, be worn. A second worker, placed on the outside of the tank, should watch the man within. Should the first worker be overcome, the man on the outside can readily remove the victim. When the proper breathing equipment is employed in conjunction with safety belts and life lines there is really little chance for a serious accident resulting from the toxic gases.

There are a number of cases where men, improperly equipped, have been overcome while cleaning the interior of tanks or vats. In some instances, these men have sacrificed their lives because other members of the crew were unable to pull them out. In other cases members of the gang have entered the tank to effect a rescue and, not being properly equipped, were overcome. These cases are not new in industry. The point is, however, that such a loss of life is needless as the enforcement of proper safe practices and the use of safety equipment would go a long way in reducing the hazard.

The Economics of Coal Hydrogenation

The British subsidy to ensure the financial success of the I.C.I. operation of a modified Bergius process to produce synthetic motor fuel by hydrogenating coal which we commented on editorially last month has been subjected to this economic criticism by "Nature." As this is a development promising far-reaching effects upon a number of chemical, coal and petroleum operations, this summary of the situation as viewed in England is of notable concern to us.

TECHNICAL hydrogenation is to become an accomplished fact in England. The thorough and patient research in the laboratories of Imperial Chemical Industries, Ltd., which is credibly reported to have involved an expenditure of at least a million pounds sterling, is to be rewarded by being applied to practice, and orders have been given to make a start immediately with a large plant to be erected at Billingham-on-Tees aimed to produce 100,000 tons a year of first-grade gasoline. In this plant about 400 tons of coal a day will be put through the process, and another 600 tons a day will be required to make the necessary hydrogen and produce the required temperatures and pressures in the circuit.

A large-sized pilot plant has been steadily in operation for many months always accumulating new experience which the large plant will help to supplement and enlarge. Apart from the necessary chemical engineering design, there is the problem of handling these very large quantities of materials each day at a regular rate and with maximum economy; this applies in particular to the hydrogen required, which, as the lightest gas, takes up a very large volume. Few processes can have been more carefully thought out in advance than this one of oil hydrogenation, and it is probable that the chemists and engineers of I.C.I. have had the advantage of the advice and criticism of their colleagues in other lands since, as is well known, all the patents in this field are the joint property of an international pool.

It is as an economic experiment that the venture invites criticism. When gasoline can be delivered at British ports at about 3½d. per gallon, why make it from coal at a minimum cost of 7d.? The process can only succeed financially in England when it is protected by a duty such as the Government has pledged itself to retain for nine years. Such action will involve a loss in customs receipts amounting to £1,000,000 per annum. But in these days of depression, there is another side to the venture—that of the employment at home to which so large a plant will give rise. The construction of the plant is estimated to take eighteen months and it will produce much activity in the iron and steel industry—during this period some 12,000 men will be employed; ultimately permanent direct employment will be given to 2,500 miners and process workers, as well as much indirect employment. There can be little doubt that much more than the million will be returned to the State both in the form of saved unemployment pay and of receipts from taxation. The mines and the railways will share in the new work, while last, but by no means least, is the psychological effect of the new activity in a heavily depressed area.

On balance, therefore, the scales are heavily weighted in favor of such action as the British Government has encouraged I.C.I. to take, and though to the purist it is akin to madness to make a product at twice what it can be purchased for elsewhere, such is the effect of the intense nationalism from which the world is suffering. It may be urged also that it is illogical to take as the comparative price of gasoline a figure which results from overproduction and excessive competition in a world market with falling consumption: a few years hence may see a very different price for this commodity.

The Billingham plant will be adapted to hydrogenate both coal and the oil from coal produced either by low or high temperature carbonization. It is to be hoped that I.C.I. will see their way to pay a liberal price for such low temperature oil, so as to encourage its production with the consequent repercussion on the sorely tried coal industry. There is something to be made also out of the creosote oil of the tar distiller by hydrogenation, though its treat-

ment and utilization bring new problems with them. What is wanted is a plant situated centrally for the larger groups of tar distillers, operated perhaps on a cooperative system in partnership with I.C.I. The products of coal are not fetching a proper price in relation to their real value today; they are being degraded rather then ennobled, and though we would prefer to see them converted into dyes and drugs and chemicals than burnt in the automobile, the fact is that at the moment the latter is the larger and more profitable outlet. The problem of the hydrogenation of the tar oils is a serious one and it should be put next on the list for action; it should at least be enjoined that no selfish holding up of the patent rights should entail delay.

The actual pledge of the Government made by the Prime Minister on July 18 is equivalent to a preference of 4d. per gallon for nine years from April 1, 1935, and it has been repeated in these words to the benzol-producing industry by the Secretary for Mines, Mr. Ernest Brown, M.P.

The necessary new capital for the scheme, estimated at about 2½ millions sterling, will be provided by I.C.I. from their existing resources. It is understood that the marketing of the new gasoline will be in the hands of one of the old-established oil companies.

Quite apart from the aspects that have been considered, the new development has significance as a serious attempt to make some use of our coal resources other than by burning the raw coal. Low temperature carbonization has so far failed to make real headway, but the pioneer efforts of the South Metropolitan Gas Co. are showing that in the hands of competent engineers and chemists this process also has its prospects. Coal is convertible into gas, coke and oils. Good use can be made of the first two, particularly since coke, like gas, has been sold of standard and constant quality. It remains to make more of the oil. This accomplished, coal may once more take its place among the mineral treasures of Great Britain instead of being a source of social anxiety.

Trick Names for Fertilizers

The German Nitrophoskas, in which ammonium phosphate, ammonium nitrate or urea, and potassium sulfate or chloride are mixed to give various ratios of $N:P_2O_5:K_2O$, are by now well-known. Imperial Chemical Industries, Ltd., in England is marketing a similar range of concentrated fertilizers, and Nitro-Chalk, a mixture of ammonium nitrate and calcium carbonate, is making fresh headway each year. The annual production of the American Cyanamid Co.'s Ammo-Phos has reached hundreds of thousands of tons. There are many others, of which we can think of Ammonitre, Phosphazote, Potazote, Ammoniated Superphosphate, Leunaphos, Leunasalpetre, Kalisalpetre, Ammophoska, Nitropotasse, and Superam, and patents for similar new combinations of the three essential plant-foods are being taken out with great persistency. Can their description by means of proprietary names continue for any great length of time? We are already reaching the point when the possible combinations of am, nit, azote, sup, phos, kali, and ka will have been used up, and the manufacturers of new products will have to devise a new method of nomenclature. The problem is a difficult one. One possible solution, we suggest, might be to give the name of "N.P.K. Manure," with the ratio of nitrogen; phosphoric acid; potash, to any fertilizer supplying all three plant-foods. With such a system, Nitrophoska "Rot" would become "N.P.K. Manure—15:30:15," and Ammophoska III would be "N.P.K. Manure 10:30:10." Such a system would not differentiate between ammoniacal and nitrate nitrogen, or between tri-calcic phosphate and a water-soluble form: but it has the merit at least of a comparative basis, and without this the man who has only a little knowledge of fertilizers may in a few years be completely at sea.

Report of Committee on Unemployment and Relief

Registration of unemployed chemists and chemical engineers during July was increased by 25; six secured permanent positions; two temporary ones; with marked activity in the employment of junior chemists, a few recent graduates also being considered. Our experience leads us to believe that chemists and chemical engineers with extended experience will find it very difficult to secure positions for at least several months to come. Another great problem is to get jobs for unemployed men 50 years of age or over. Practically all earned from $3,600 to $25,000 per year in normal times and the resources of some have become exhausted with continued unemployment.

Progress in the fundamental research program sponsored by this committee is reported in the following projects taken for investigation during the last eight months:

1. Investigation of A.B.C. proteins of fish lenses.
2. Study of products from castor oil.
3. Diamagnetism of water at various temperatures.
4. Study of diffusion cells.
5. Graphical presentation of principles of fractional distillation.
6. Toxicological effects of compounds related to barbituric acid group.
7. Study of chrysene and its derivatives as factors in producing cancer.
8. Study of chemical constitution and physiological reaction—cholines and other quartenary ammonium salts and their derivatives.
9. Effect of various concentration of certain chemicals upon the growth of B. Coli and inhibition of B. Aerogenes.
10. Principles and laws governing grinding and particle sizing.
11. Ceramic properties of talc.
12. Application of high speed rotating cathode.

The latter six are still being continued.

From the funds contributed by members of the profession, we have been able thus far to help 55 families either by made-work relief or loans. In addition to handling relief and employment, the committee has served as a helpful agency in the following:

1. Members of the committee were called upon to give information regarding manufacturers and persons engaged in definite chemical endeavors by sales representatives coming from foreign lands.
2. Contact has been maintained with the Travellers' Aid Society and help given to such families of chemists and chemical engineers who were stranded in this area and were desirous of bettering their position by going to other parts of the country.
3. Through the cooperation of several technical publications in the greater metropolitan area, free space for advertising the records and experience of unemployed chemists and chemical engineers was obtained. To date, 84 free advertisements have appeared.

Members of the committee are desirous of maintaining statistical information related to the strength of the chemical profession, the number of manufacturers, the fluctuation in unemployment, etc. which are difficult to obtain unless the industries cooperate with the committee. As work of this type is fairly expensive no vigorous action has been taken toward this direction. It is very essential that employers use this committee as a source for prospective employees. We have on our files complete classification of the records of all applicants registered with the committee and are in a position to select the proper men for the jobs in view.

New Uses for Aluminum Oxide

OXIDE of aluminum is attracting continued attention from technologists, not only as the basic material for the manufacture of aluminum, but also as a constituent of refractories and abrasives and for its catalytic and adsorptive properties. Corundum and emery, natural forms of the oxide, are now made on a considerable scale in the electric furnace; while the hydrated forms are worked up as the major sources of alumina in the industries. In one method bauxite is treated by furnacing with soda to give sodium aluminate, which is removed by leaching, while a second process involves heating under pressure with caustic soda, followed by precipitation of the hydrated oxide with carbon dioxide. An alternative method of liberating the product is to precipitate it by addition of aluminum hydroxide itself, causing a large proportion of the alumina to collect, while the mother liquor is used for further extraction of bauxite. From leucite, which is the siliceous form of importance to Italy, the alumina is produced by furnacing with limestone and leaching the product with a soluble carbonate, followed by decomposition of the aluminate.

Hyland and Hall Processes

Among several electrothermic preparations is that of Hyland in which impurities are removed with carbon in the furnace and the alumina recovered as a slag, the latter being crushed and hydrolyzed. A second important one, which is a modification of Hall's process, consists in removing metallic impurities as an alloy of iron aluminum, silicon and titanium, the molten alumina remaining (after tapping off this alloy) being blown by high-pressure air or steam into small hollow granules. Subsequent leaching of these with a dilute acid gives a product containing 99.75 per cent. Al_2O_3. This method of removing iron and silicon as a ferro-silicon alloy is also employed when the abrasives and refractories known as corundum, alundum, and aloxite, are the desired physical forms of alumina; for bauxite is the raw material and contains little more than 50 per cent. Al_2O_3, the remainder being oxides of silicon, iron and titanium, together with about 25 per cent. loss on ignition. The furnace for aloxite manufacture is a cylindrical steel shell with a floor covered with coke, often with the addition of tar and coal when making other types of corundum. Water cooling is adopted, and the carbon electrodes are fixed vertically from the top; the charging hole is fed gradually with a charge of calcined bauxite admixed with reducing and slag-forming agents. The product obtained as a solid ingot is removed from the furnace, disintegrated, and is screened.

Alumina as used for abrasives has a melting-point of 2,010° C. and a hardness of about 9 (Moh's scale). In a material containing about 97.5 per cent. alumina, it is common to find one-third of one per cent. iron oxide, 0.9 per cent. silica, and the rest is titanium oxide, the latter often being added when a tough abrasive is desired. For conversion into grinding wheels, crucibles and sharpening stones, the ground material is compounded with various vitrified bonds and fired in a potter's kiln as in the ceramic industries. Alumina is also an important refractory, being chemically inert toward alkaline solutions and fused silicates, although it is slightly soluble in hot dilute acids. It has been recently shown in this connection that alumina may be made denser and more refractory by burning on the surface of it a mixture of gas and air on the principle of surface combustion.

Alumina Gel as Absorbent

As an adsorbent, alumina gel has a future which will be no less important than that of silica gel. Bauxite has long been used to remove impurities from mineral oil by filtration: but this earth treatment is hardly comparable to the high efficiency of alumina gels of 6 per cent. water content. These porous masses are obtained by acidifying sodium aluminate, just as silica gel comes from sodium silicate. Activation and re-activation are brought about by heating with air or super-heated steam, and it has been stated in Canadian research laboratories that re-activation may be repeated 1,000 times without deterioration. For the drying of air in conditioning or for blast furnaces the alumina gels are equal to silica gels, while high efficiencies have also been demonstrated in the dehydration of ammonia, hydrogen, oxygen, carbon dioxide, and chlorine. Selective adsorptions are also shown in the recovery of benzol, ether, carbon tetrachloride and gasoline vapors, from vapors plus gas mixtures, and also of hydrogen sulfide from carbon dioxide and chlorine from hydrogen. Up to a point when the gels have increased by 12 per cent. in weight, moisture is eliminated from gases with 100 per cent. efficiency; and, if lower efficiencies are permissible, then adsorption will continue until 25 per cent. increase in weight has occurred. A gel activated at 300° to 400° C. is useful for elimination of sulfur compounds from petroleum, and even better results are obtainable with combinations of alumina and silica gels.

As a catalyst in organic chemical reactions alumina has been prominent since the pioneer work of Sabatier and of Mailhe. Here, again, future developments will

certainly appear as the reactions in the laboratory assume industrial importance. When phenol vapor is passed over alumina at 400° to 450° C. diphenyl oxide is formed and is used in the perfume industry as an artificial geranium odorant. During the war acetone was manufactured in one process by passing acetic vapors over alumina at 500° C., the oxide being precipitated on a porous granular support. It is the glut of acetone made by fermentation methods, and the increased use of methyl acetone from wood distillation in place of acetone, and not lack of efficiency in the catalytic method of preparation, which explains why this method has been suspended. Any future demands for aldehydes will certainly be met by a similar use of the catalyst, the vapors of formic acid and of a second aliphatic acid being used together in equimolecular proportions.

Interconversion of Alcohols and Olefines

Although there are two major sources of ethylene at present, viz., extraction from coke oven gas, and, in America, from the cracked gas of the petroleum industry, yet increased demands in the future will attach greater importance to the manufacture of ethylene from alcohol. With the demand for ethylene bromide in the production of ethyl gasoline, America explored all possible sources of bromine, both in bitterns and by that amazing cruise of the S. S. Ethyl for extracting the halogen from sea-water. At the same time, ethylene came into prominence and the catalytic production became an established commercial process, for at 340° to 360° a conversion of 98.5 per cent. is obtained with alumina, a value which equals the yields using more expensive tungstic oxide. Similarly, butyl alcohol gives butylene, so that the conversion of alcohols into hydrocarbons of the olefine series by use of alumina as a catalyst, and the reverse change using sulfuric acid, are reactions awaiting a wider development.

Chlorine and Its Many Uses

On the subject of hydrogen sulfide, some rather promising work carried out recently in Scotland for the treatment of the exhaust gases from the spinning operation in the viscose artificial-silk process seems worth recording. The matter has been investigated and a research instituted with the object of discovering a method of dealing with the fumes. Scrubbing with a dilute solution of caustic soda, as adopted in certain other viscose-rayon plants, was not practicable in this particular instance, owing to the heavy expense entailed, and a trial was made of the chlorine method for the destruction by oxidation of organic sulfur bodies. The original trials gave very satisfactory results, the smell being almost entirely removed from the fumes, and general conditions in the neighboring district being very greatly improved. Arrangements have now been made for the process to be installed permanently, and for the supply of chlorine to be controlled through an automatic regulator. Now that efficient automatic regulators for chlorine supply are available, an extension of the chlorine process to numerous deodorization and similar processes would seem possible. We note, for instance, that the I.G. has recently patented a method of controlled chlorination for the rendering safe of spaces likely to contain arsine. In connection with the work on viscose spinning-bath fumes, the unexpected observation was made that the amount of chlorine required for the complete deodorization of the fumes was only about one-eighth of the theoretical quantity necessary for the destruction of the whole of the hydrogen sulfide in the gases. What happens, apparently, is that the chlorine has a selective oxidizing action upon the small quantity of organic sulfur bodies present in the gases, and which, much more than the hydrogen sulfide itself, are responsible for the characteristic objectionable odor.—*Chemical Trade Journal.*

Book Reviews

Principles of General Chemistry, by Stuart R. Brinkley. 579 p., published by The MacMillan Co., 60 5th ave., N. Y. City. $3.50.

A new edition of a popular class-room book for first year college chemistry students by the Yale associate professor of chemistry. The general lay-out of the first edition has been preserved but the text enlarged and corrected for the many developments in the past seven years. Book is designed primarily to keep alive the interest of the student who though he has some chemistry knowledge has not enough to permit entrance into advanced courses and must, therefore, go through a year of general chemistry.

General Chemistry, by Azariah T. Lincoln and George B. Banks. 681 p., published Prentice-Hall, Inc., N.Y. City. $3.50.

This new text is admirably suited for first college courses. While the text contains considerably more material than can be given in a one year's course, process of making selections and omissions is quite simple. In fact, material is so arranged that several types and sizes of courses can be offered, depending on the particular group of students concerned and the amount of time available, without in anyway breaking the continuity of the work.

"General Chemistry" holds the attention and interest of the student by an attractive treatment of interesting things with a gradual unrolling of the unknown. It employs the principle of repetition. Chemistry studied is applied to problems of the home, of health, of agriculture, of industry, of medicine, and of national defense.

The Conductivity of Solutions, by Cecil W. Davies, 2nd edition, 281 p., published by John Wiley & Sons, Inc., 440 4 ave., N. Y. City. $4.00.

A very detailed study of the subject of the conductivity of solutions that has been standard for several years. The present edition is enlarged considerably and two new chapters added, dealing with the practical applications of conductivity measurements.

Stabilization of Money, by James Goodwin Hodgson, 238 p., published by The H. W. Wilson Co., 958 University ave., N. Y. City.

Stabilization of money—in other words the stabilization of the general price level is a subject of live and vital importance in this day and age of new economic experiments. What was fantastic a year ago is law today. This book, more than any other, supplies valuable data on this interesting phase of controlled economy.

Modern Alchemy, by William Albert Noyes and W. Albert Noyes, Jr., 207 p., published by Charles C. Thomas, Springfield, Ill. $3.00.

For more than a thousand years alchemists sought in vain for the Philosopher's Stone, which should transmute base metals into gold and for an Elixir of Life, which should give eternal youth. The quest was finally abandoned as hopeless, but the transmutation of elements has been observed in recent times and many ways of healing disease and prolonging life have been found. The vicissitudes of the search for transmutation and for healing principles are typical of the progress of science and have been taken as the ground work of this book.

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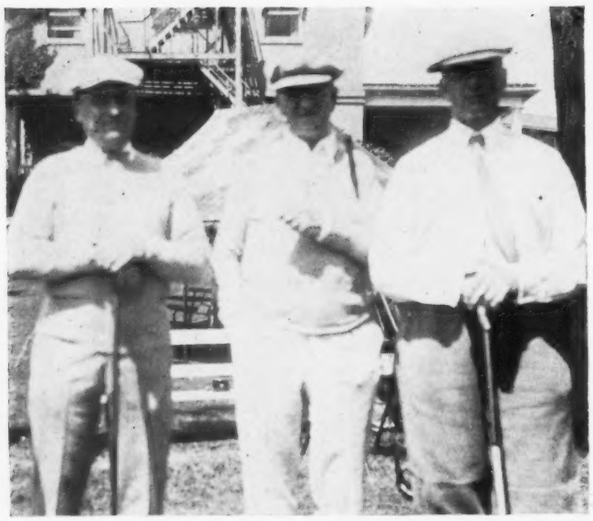
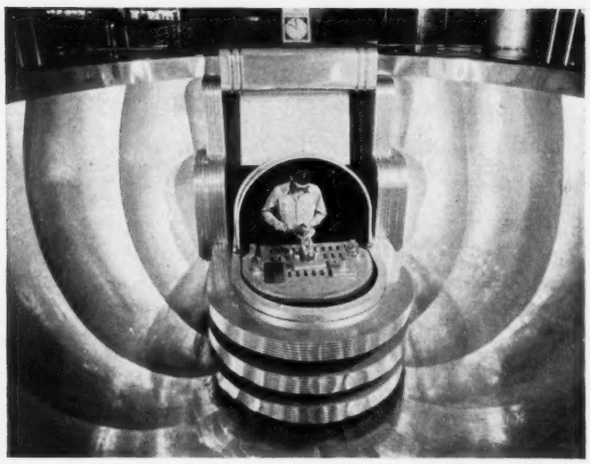
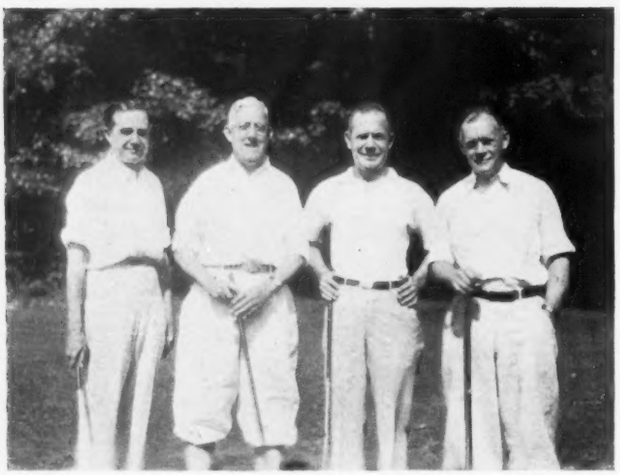


Warren Kinsman (Du Pont), Harry and Elon Hooker taking time out before retreating to the 19th hole.



Oxy-acetylene welding exhibit of Union Carbide and Carbon Corp. at A Century of Progress provides the thrill of looking down into a huge metal bowl flooded with light from concealed sources. As you watch, an opening appears in the base of the bowl and a workman is seen using the welding and cutting outfit.



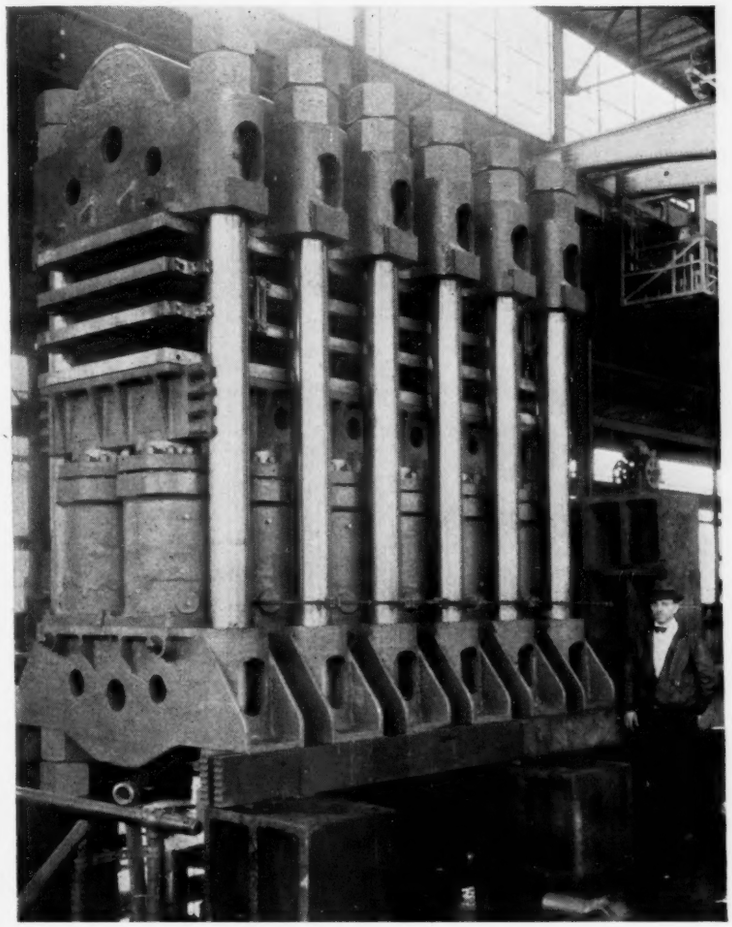
A famous fighting foursome. L. to r. Harry Farleigh (Michigan Alkali), "Doc" Dorland (Dow Chemical), Williams Haynes, (Chemical Markets), and H. Gordon MacKelcan (Innis Speiden). Below, Hugh Galt (President of the new Southern Alkali) off duty.

Photograph below shows soldiers loading 4" Stokes (chemical) mortars during a chemical warfare demonstration of tear gas at Camp Dix, N. J. Photograph directly opposite on next page shows a smoke screen being laid down by screen candles which burn for four minutes and are fired by electric batteries. Demonstration was brought to an abrupt end when a cloud of the gas suddenly shifted with the wind and drove 600 spectators from the field.

Acme Photo

NEWS REEL

of Our Chemical Activities



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P-10–Ricinoleic Acid
P-20–Ricinoleic Acid

P- 7–methyl undecylineate
P- 9–acetylated polymerized castor oil
P-11–methyl ester of polymerized ricinoleic acids
P-12–ethyl ester of polymerized ricinoleic acids
P-13–butyl ester of polymerized ricinoleic acids
P-14–methyl ester of acetylated polymerized ricinoleic acids
P-15–ethyl esters of acetylated polymerized ricinoleic acids
P-16–butyl ester of acetylated polymerized ricinoleic acids

Changing Fertilizer Markets in Japan

Some facts on Imports and Exports

By Charles E. Mullin, D. Sc.

THE use of fertilizers in the Far East is probably more necessary than in any other part of the world but, due to economic conditions, human manure is by far the most widely used source of nitrogen, even for vegetables and other foodstuffs. This is supplemented by such other materials as may be available locally and in Japan, fishery refuse, soya bean oil cake, pupa from reeled silk cocoons, guano, and synthetic fertilizers are used. These and other materials are also used in other parts of the East, but the synthetic fertilizers are usually much too expensive for use by the small farmers of Asia. It is only in those parts of Japan, the Philippine Islands, China, Java, and India, that are producing agricultural products for export, such as sugar, that we find much synthetic fertilizer in use. Japan is the only country in the Far East that has developed the nitrogen fixation industry on a large scale.

One authority estimates the average consumption of natural and synthetic fertilizers in Japan for a few years before 1931 at about $300,000,000 annually, including the various manures, but this is believed to be rather high. See table. Apparently about half of the fertilizers, aside from the manures, are imported. The domestic production of all fertilizers was estimated at about $110,000,000 of which about $50,000,000 is for synthetic products. The tendency is towards the cheaper products and it is believed that the imports have decreased considerably since the period covered by the tables, partly due to the depression but also on account of the very low price of silk, which reduces the demand for mulberry leaves for feeding the silk worms.

In 1928 there were some 23,823 plants manufacturing fertilizers with a production estimated as high as $111,839,500, an average of about $4,700 per plant. In view of the fact that there are a few quite large plants, with proportionately heavy production figures, the above is not a very high value. There were 23,924 plants in 1929 with a total production of $105,378,000, or an average of only $4,400 per plant. The present centers of production are Osaka, Mie, Tokyo, Hyogo, Fukuoka, Nugata, Kumamoto, Shizuoko, and Hokkaido prefectures, in the order named.

Superphosphates

Superphosphate was first produced in Japan in 1887 by the Tokyo Artificial Fertilizer Company, with a capital of $125,000,000, which was succeeded by the Dai-Nippon Artificial Fertilizer Company (Dai-Nihon Jinzo Hiryo Kabushiki Kaisha). By consolidations, the latter company now controls some 60 per cent. of the domestic production. It is claimed that production has increased at the rate of about 10 per cent. annually. Domestic sulfuric acid is used but most of the phosphate rock comes from England, the United States, France, Christmas Island, Morocco, and other sources. Phosphate rock is available in Japan but the anhydride content is very low. About 530,000 metric tons were imported and some 60,000 to 70,000 tons were produced locally in 1929. The value of phosphorite imports for 1928 were $5,987,500; 1929, $6,727,500; and for the first half of 1930, $3,823,500.

Superphosphate is now produced by 14 firms with a paid-up capital of $26,700,000 and an investment of $34,200,000, operating 32 plants with an annual production capacity of 1,300,000 metric tons. Before the present slump in Japan, the demand for superphosphate was on the increase but by 1931 there was an overproduction. Japan is exporting some heavy superphosphate and mixed fertilizers to China, India, the South Sea Islands, and Manchuria, through the Artificial Fertilizer Association, composed of fourteen producers. In 1929 these exports amounted to about 10,000 metric tons. The Dai-Nippon Artificial Fertilizer Company has been producing phosphoric acid containing over 30 per cent. of phosphoric anhydride since about 1926.

Japanese Superphosphate Production

Year	*Weight in metric tons*
1927	850,000
1928	1,014,000
1929	1,091,500

Ammonium Sulfate

As in other countries, cheap electric power is a big factor in the Japanese production of synthetic ammonium sulfate, which was first produced in Japan in 1905, with a production of some 488 metric tons. It is claimed that until the present depression the Japanese production of the sulfate increased by more than 20 per cent. annually. See tables. In 1930 the Japanese nitrogen fixation plants produced some 200,000 tons of synthetic ammonium sulfate, of which the Japan Nitrogenous Fertilizer furnished about 100,000 tons.

The Japan Nitrogenous Fertilizer Company first produced calcium cyanide from atmospheric nitrogen in 1910. The Denki Kagaku Kogyo Kaisha (Electro-Chemical Industry Company) was founded in the same year, and uses the same process. They produced some 40,000 metric tons of ammonium sulfate and calcium cyanide in 1917, due to the war. The Haber patents were acquired during the war and played an important part in the development of the Japanese industry. The Casale and Claude processes for synthetic ammonia were secured in 1924. The Dai-Nippon Company first used the Fauser process in 1928. The Chosen Nitrogen Company, Korea, started using the Casale process for ammonium sulfate in 1930.

Collecting sea-weed for the manufacture of potash in Japan.

Prior to 1919 England supplied practically all of the sulfate imported but the United States entered the field at that time and Germany became a factor in 1922. Under normal trade conditions the native producers expected to manufacture some 1,200,000 metric tons of sulfate annually by 1935 and thus meet the local demands but it is quite probable that, with the decreased purchasing power of the farmers, they may be able to meet this demand earlier than anticipated. The 1931 consumption of sulfate was expected to reach 500,000 metric tons but probably fell below this point.

In 1931 there were nine companies operating eleven plants for the manufacture of calcium cyanide, three companies operating five plants for ammonium sulfate from calcium cyanide, and four companies operating five plants for the manufacture of synthetic ammonium sulfate. The latter also produce some 75,000 tons of nitrogen compounds, other than ammonium sulfate, of which about 45,000 tons were from the plant of the Electro-Chemical Industry Company. A new company was being organized for the manufacture of ammonium sulfate from calcium cyanide and two for the production of synthetic ammonium sulfate.

The Overseas Department of the Japanese Government has recently granted a permit to the South Manchurian Railway Company to establish an ammonium sulfate plant at Dairen, Manchuria. This new project will be known as The Manchurian Industrial

Japanese women cutting up soya bean oil cake for use as fertilizer.

Value of Japanese Fertilizer Production

(In gold dollars)

Variety	*1921*	*1922*	*1923*	*1924*	*1925*
Fertilizers	$35,572,000	$35,149,500	$40,911,500	$48,754,500	$57,638,500
Vegetable	6,290,500	7,649,000	12,059,000	11,139,500	13,515,000
Mineral	29,281,500	27,500,000	24,203,000	25,325,500	29,680,500
Calcium superphosphate	7,521,000	5,161,500	8,703,500	11,551,500	14,532,000
Ammonium sulfate (crude)	9,352,000	7,094,000	8,450,500	9,308,500	9,659,500
Calcium cyanamide	.....	.....	1,629,500	2,255,000	1,566,500
Mixed fertilizer	.....	.....	9,198,500	11,499,000	13,378,000
Variety	*1926*	*1927*	*1928*	*1929*	*1930*
Fertilizers	$57,479,000	$59,415,500	$71,052,500	$88,886,500	$67,985,500
Vegetable	13,729,500	9,592,000	14,387,000	19,370,500	11,668,500
Mineral	28,687,000	35,643,000	35,869,000	41,079,000	39,187,000
Calcium superphosphate	9,952,000	16,991,000	17,123,500	17,348,000	17,774,500
Ammonium sulfate (crude)	11,518,000	10,291,500	13,543,500	14,032,000	11,223,000
Calcium cyanamide	4,176,500	3,073,000	3,155,000	8,677,500	8,324,500
Mixed fertilizer	14,375,000	13,567,500	19,642,500	23,024,000	14,801,000

Chemical Company, Ltd., or the Manchu Kwangaku Kogyo Kabushiki Kaisha. The proposed plant will have a capacity of 180,000 metric tons of the sulfate annually. Production is expected to start about the middle of 1933, on the basis of about 90,000 tons, but it is not expected to reach full production for some time.

According to the Department of Commerce, the price of ammonium sulfate and superphosphate in the Japanese market advanced considerably in November 1932, and ammonium sulfate was quoted at 3 yen per bag of 82.7 pounds. Under the gold standard, upon which the figures given in the accompanying tables were computed, this would be $1.50 gold, but under the exchange rates prevailing throughout most of November, it would be about $0.63. An active demand was reported from the mulberry leaf raisers, who have been able to obtain low interest rates from the government, through the prefectural authorities. It is stated that the Dai-Nippon Artificial Fertilizer Company was unable to accept orders for delivery in less than two months. The Showa Fertilizer Company passed its dividend for the April to September period but sold some 70,000 tons of ammonium sulfate and 10,000 tons of cyanamide and calcium carbonate during the same period. The Japanese licensing regulations for the importation and exportation of ammonium sulfate, which came into effect on January 15th, 1932, were cancelled on December 6th, 1932.

Bean Oil Cake

The importation of soya bean oil cake for fertilizer use reached a peak in 1923 and has since been decreasing. From 60 to 70 per cent. of the oil cake now used for fertilizer can be replaced by ammonium sulfate and calcium cyanide. As the prices of these chemicals decrease, the demand for oil cake for this

Average Wholesale Prices of Fertilizer in Tokyo

(In gold dollars)

Year	*Calcium Superphosphate 19.5%, per 62 lbs.*	*Ammonium Sulfate per 82.7 lbs.*	*Chilean Sodium Nitrate per metric ton*	*Pressed Herring Cake per 82.7 lbs.*	*Soya Bean Cake per piece of 60.8 lbs.*
1921	$0.705	$3.285	$166.41	$3.775	$1.06
1922	0.615	3.535	68.535	4.42	1.155
1923	0.72	3.985	70.51	4.315	1.10
1924	0.78	3.495	70.685	4.02	1.26
1925	0.745	3.67	90.195	4.32	1.40
1926	0.745	3.22	67.67	3.775	1.165
1927	0.69	2.665	66.165	3.235	1.045
1928	0.63	2.515	58.28	3.135	1.12
1929	0.61	2.375	54.15	3.25	1.095
1930	0.565	1.66	47.125	2.52	0.81
1931	0.50	1.345	41.01	1.725	0.535
Jan. '31	0.525	1.375	42.62	1.925	0.52
Feb.	0.525	1.375	40.50	1.975	0.545
Mar.	0.54	1.44	40.685	1.945	0.56
Apr.	0.55	1.645	42.000	1.85	0.56
May	0.55	1.625	42.000	1.63	0.53
June	0.525	1.495	41.515	1.53	0.535
July	0.495	1.42	41.515	1.635	0.57
Aug.	0.475	1.215	41.000	1.625	0.525
Sept.	0.46	1.15	40.365	1.60	0.505
Oct.	0.425	1.135	39.015	1.555	0.495
Nov.	0.435	1.125	39.000	1.575	0.52
Dec.	0.48	1.21	42.40	1.88	0.545

purpose will steadily decrease, especially in view of the increasing use of this material for food purposes.

Sources of Japanese Oil Cake Imports
(Value in gold dollars)

Country	*1929*	*1928*
China	$20,281,000	$22,038,000
Manchuria	16,499,500	19,305,500
British India	1,054,000	1,994,000
Russia (Asiatic)	45,500	34,500
All others	79,000	42,500
Total*	$37,959,000	$43,414,500

*The total imports of oil cake for the first half of 1930 were valued at $29,295,000.

Japanese Ammonium Sulfate Production

Year	*Metric Tons*
1927	187,172
1928	228,840
1929	246,620
1930	310,000 (estimated)

Japanese Consumption and Importation of Ammonium Sulfate

Year	*Consumption*	*Importation*
1925	303,713	203,550
1926	399,545	296,025
1927	385,243	250,013
1928	456,548	284,475
1929	500,000	380,658
1930	500,000 (estimated)	.....

Japanese Imports of Ammonium Sulfate

		1929		*1928*
Source	*Metric tons*	*Value*	*Average*	
Germany	181,065	$11,638,500	$64.3	$9,422,000
England	137,982	8,833,000	64.2	6,400,000
United States	53,282	3,217,500	60.4	1,739,000
Manchuria	.....	207,000	....	85,000
Australia	.....	86,500	....	50,500
All others	.....	62,000	....	456,000
Total*	.....	$24,044,500	....	$18,152,500

*The total ammonium sulfate imports for the first half of 1930 were valued at $11,462,000.

Sodium Nitrate Imports
(Value in gold dollars)

Source	*1929*	*1928*
Chile	$4,893,500	$2,908,500
All others	132,000	130,500
Total*	$5,025,500	$3,039,000

*The total imports of crude sodium nitrate for the first half of 1930 were valued at $1,474,000.

Japanese Fertilizer Consumption for 1928
(In metric tons and gold dollars)

Variety	*Consumption in metric tons*	*Value in dollars*
Oil refuse (vegetable)	1,521,538	$61,915,000
Fish guano	128,863	8,943,500
Bone dust	71,250	3,625,000
Superphosphate of lime	843,263	14,775,000
Sodium nitrate	54,420	3,336,000
Ammonium sulfate	413,779	27,717,000
Calcium cyanide	144,560	6,501,500
Potassium sulfate	31,046	2,001,500
Mixtures	553,200	22,315,000
Total	3,761,919	$151,129,500

Japanese Fertilizer Imports for 1928
(In metric tons and gold dollars)

Variety	*Metric tons*	*Value in dollars*
Bean Cake	1,144,688	$45,270,000
Sodium Nitrate	57,363	3,549,500
Ammonium Sulfate	276,838	19,000,000
Potassium sulfate	31,175	2,014,000
Potassium chloride	13,625	699,500
Ammonium phosphate	21,361	1,588,500
Total	1,545,050	$72,121,500

Chemical Producers and the Ottawa Pacts

By J. Davidson Pratt

Actually Britain's chemical trade with the Dominion has not increased by very much since the signing of the Ottawa pacts, but this is not due so much to lack of sufficient preferences as to the difficulties placed in the way of business by fluctuating exchanges.

British chemical firms are not asleep to their opportunity in Canada. Within recent months there have been no less than five directors of British companies over there, making trade contracts and surveying the situation. The only other factor that has kept our firms from sending over large quantities of their products is that up to the present there has been no list available of the chemicals manufactured in the Dominion, and our people were reluctant to take the chance.

On the average, Canadian-made chemical materials are protected by a tariff of about 15 per cent. against similar products which enter from Britain. Those not manufactured in Canada are permitted to enter duty-free from Britain, while heavy duties are levied against the same chemicals entering from the United States or other countries.

The new Roosevelt Industrial Recovery Act has tremendous possibilities for both Britain and Canada. The Act proposes to limit the hours of labor to 40 a week. That, of course, should raise the prices of American manufactured commodities. In turn, higher prices should make it easier for both Canadian and English concerns to sell their products in the United States. But then, again, United States industry might say that if the interior prices rise, it will be necessary to have still higher tariffs. The situation needs study.

After all the one commodity of which you cannot have enough is leisure. A short time ago Lord Melchett proposed a scheme which may well be what Roosevelt eventually will arrive at. He suggested that there may be an economical working day beyond which it is not wise to reduce hours.

But this solution was that the workman's leisure be saved up for him, and given out in lumps, as it were. That every year he should have a full month's holiday on full pay. Perhaps two months, and that he can use this time for improvement of his health and mind, or perhaps to the lowering of his golf handicap. If, and when, American industry is properly organized, this sort of thing should be possible in the United States.—*Abstracted from The Chemical Age.*

Chemicals for Road Testing Research

Mercuric chloride and mercuric nitrate are used in a float test for bituminous materials; carbon bisulphide is employed in the crucible method of determining total bitumen; both carbon bisulphide and carbon tetrachloride are used in determining the solubility of bitumen; hydrochloric acid and barium chloride for analysis in tests for cement; and benzol is used in the testing of preservative oils.

Disadvantages of the Non-Flammable Solvents

William Brown, M. Sc., A.I.C., reviews here, in an article from the point of view of practical applications, the various "dont's" in the use of the new solvents in dry cleaning. Abstracted from the "Dyer and Calico Printer."

THE non-inflammable solvents cannot claim the advantage of being cheap. In competition with the older solvents of benzine or white spirit type, the chlorhydrocarbons are heavily handicapped, their price per gallon being nearly three times that of the older solvents. The initial price per gallon, however, is not necessarily an indication of the cost of using the solvent. Beyond the effect of these differences in cost, in that the value of stocks of solvent necessary is correspondingly higher with the newer solvents, the cost of operating depends entirely upon the amount of solvent consumed during the cleaning operations.

In comparison with the ideal solvent, the non-inflammable solvents do not agree with the item of cost so well as the petroleum solvents, but the consumption of the latter is rarely less than 10 per cent. of the dry weight of the goods being cleaned. Tests of the consumption of non-inflammable solvents have shown losses of 8 per cent. and 6 to 8 per cent. of the weight of goods. It is obvious that solvent losses vary with the type of plant and also with the solvent used. It has previously been pointed out that owing to the specific gravities of the non-inflammable solvents being approximately twice those of the inflammable ones, the figures of percentage solvent loss must be halved in order to obtain the relative consumption in gallons. Thus, a solvent loss of 10 per cent. of the weight of goods cleaned would indicate a loss of 1.25 gallons per 100 lb. of work in the case of white spirit (specific gravity 0.80) and a loss of 0.625 gallons in the case of carbon tetrachloride (sp. gr. 1.6).

The loss of solvent during the whole of the cleaning operations depends largely upon the type of apparatus employed. It is essential with the chlorhydrocarbons that totally enclosed systems be used. These systems are designed with the express object of reducing solvent losses to the absolute minimum.

The question of initial cost cannot be discussed apart from the consideration of the high volatility of the new solvents. The disadvantage of initial cost of the chlorhydrocarbons would call for the greatest attention in order to avoid unnecessary loss of solvent, but these solvents have a further handicap due to their rapid rate of evaporation. The use of benzine calls for great attention in order to reduce losses from evaporation to a minimum. How much more attention is necessary with the non-inflammable solvents, with their high price per gallon and high rate of volatilization?

A Problem for Chemical Engineers

The whole question of solvent cost when operating with the non-inflammable solvents is one for chemical engineers. The prevention of evaporation combined with the finest possible recovery of the solvent form the solution to the problem of high cost, which some would classify as a disadvantage of the non-inflammable solvents. To off-set the first cost, the chlorhydrocarbon solvents lend themselves to a very fine degree of recovery. They are particularly suitable for recovery by means of chemical absorbers of the activated carbon type. An absorber like this can profitably recover even the small amount of solvent given off during the final deodorizing process.

It is evident that the high cost per gallon of the non-inflammable solvents, while being in disagreement with the specification of the ideal solvent, can be considerably modified by the employment of a correctly designed installation. In the end, the vital cost of solvent in any dry cleaning operation is not the price per gallon, but the cost of solvent required to clean a standard article, usually taken as a suit. Even at the prices ruling at the present time, the chlorhydrocarbons can compete with the petroleum solvents when the basis of comparison is solvent loss per suit.

There is every indication that chemical manufacturers are taking notice of the new market, and consequently it is to be expected that the chlorhydrocarbons will be produced on a much larger scale. Improvement in methods of production and large-scale manufacture must tend to bring about a reduction in the price of the solvents.

Stability of Chlorhydrocarbons

The ideal solvent is required to be stable, and to remain unaltered during any operation connected with dry cleaning. The petroleum solvents belong to the class of chemicals known as the "paraffins." The term "paraffin" indicates "without affinity." The petroleum solvents are particularly inert bodies and resistant to chemical change.

In contrast, the chlorhydrocarbons are liable to chemical decomposition under certain well defined conditions. Carbon tetrachloride shows a wider disagreement with the ideal solvent than trichlorethylene or perchlorethylene, in respect of chemical stability, and it is stable to repeated distillation and storage, only when free from moisture. In presence of moisture and in contact with certain metals, especially iron, it tends to decompose with the formation of hydrochloric acid gas and the highly poisonous phosgene. It is extremely difficult to eradicate moisture from any cleaning process, in so much as many textiles hold comparatively large quantities of moisture without feeling damp. Hence, the use of the commoner metals in installations for carbon tetrachloride must be avoided, as these would not only accelerate the progress of decomposition but also be easily corroded by the acid produced.

This restriction in choice of materials for carbon tetrachloride systems tends to make the cost of the machines relatively high. It is customary to use monel metal whenever possible, in order to resist the action of the acid although other special metals, such as heavy gauge copper and nickel may be used. One installation on the market makes extensive use of chemical lead for pipe lines and for lining of storage tanks. While the cost of the carbon tetrachloride installations may appear high, there can be no doubt that these machines are very well built and give the impression of increased durability.

In addition to the cost of the cleaning machine, there is the cost of the tumbler, which a carbon tetrachloride installation should include, so that all garments can be thoroughly dried previous to cleaning. This arrangement would prevent a large proportion of moisture entering the solvent from the goods themselves. In spite of this, accumulations of moisture are always likely within the cleaning systems, especially at the filters, so that many installations are fitted with moisture traps at these points.

The necessity of avoiding moisture within a system operating with carbon tetrachloride precludes the use of soap, such as is used in conjunction with the petroleum solvents, as the soap would be a means of introducing water. Many would proclaim this a disadvantage, but so many cleaning plants are operating successfully on carbon tetrachloride alone that it is doubtful whether this is so in actual practice. There is no doubt that the prevention of corrosion, due to moisture and hydrochloric acid, is the greatest problem connected with the use of carbon tetrachloride for commercial dry cleaning.

Trichlorethylene and perchlorethylene are not affected by moisture, even in presence of iron, as is the case with carbon tetrachloride. The use of soap with these two solvents is permissible, although not widely adopted. Perchlorethylene is particularly favorable for the use of soap, so much so that a reduction in its price would make it the most serious rival to the petroleum solvents of all the chlorhydrocarbons. The tendency to decompose with trichlorethylene and perchlorethylene is shown only during exposure to light, and even that is retarded by certain additions to the solvent. It will also be seen that the employment of totally enclosed systems entirely prevents exposure of the solvent to sunlight.

The defenders of the older systems of cleaning by petroleum solvents have always emphasized the risk of physiological effect of the new solvents. It is acknowledged that the chlorhydrocarbons are powerful drugs and under certain conditions capable of producing chronic disease and even death. The question of the physiological action of cleaning solvents is of tremendous importance.

Safety of Operatives

"Does the toxic effect of the non-inflammable solvents constitute a disadvantage in their use in commercial dry cleaning?" The higher volatility of these solvents is related to increased physiological effect, in comparison with the inflammable solvents, and in consequence, special precautions are necessary to ensure the safety of operatives. It has already been shown in this discussion that the questions of high cost and volatility of the solvents compel the use of totally enclosed systems, and it would appear that these installations also supply the solution to the problem of safety of operatives. A correctly designed and efficiently maintained installation, in preventing evaporation of the solvent, would at the same time keep the proportion of vapor in the atmosphere so low that no ill effect would be felt. It must be understood, however, that the question of toxicity of the non-inflammable solvents is a serious one. All workrooms must be well ventilated especially where carbon tetrachloride is used. The toxicity of carbon tetrachloride prevents its use in exhibition cleaning installations, where a system of "semi-open" cleaning is carried out. It is surprising that in spite of this action, carbon tetrachloride is being used in one of the domestic cleaning machines now on the market.

The toxicity of trichlorethylene is of such a different nature to that of carbon tetrachloride as to cause this solvent to be at a much smaller disadvantage. Because of this, trichlorethylene can be used in the open type of machine so suitable for shop window display.

It cannot be too greatly emphasized that the danger from the non-inflammable solvents is very real during the cleaning out of tanks and pipe lines, unless strict precautions are taken in order that any remaining solvent may be entirely removed before cleaning out begins. Most of the accidents arising from the use of the chlorhydrocarbons have occurred during some process connected with the dismantling of pipe lines and filters or cleaning of tanks.

Effect on Acetate Silk Dyes

Trichlorethylene is relatively harmless in its physiological effect, in comparison with carbon tetrachloride, but the positions are reversed when the consideration is the action on cellulose acetate. Carbon tetrachloride is above suspicion in this respect, and therefore any disadvantage arising from the action on cellulose acetate refers to trichlorethylene only. Trichlorethylene is not inert to cellulose acetate under all conditions and the conditions under which this type of artificial silk is affected must be completely understood by those using trichlorethylene. The structure of cellulose acetate is unimpaired by trichlorethylene even under the most drastic conditions that occur during dry cleaning. Any injurious effect that may occur appears due to a solvent action on the dyestuffs used on this fabric. The author holds the confirmed opinion that the question of the successful treatment of cellulose acetate by trichlorethylene is almost entirely one of temperature control. The control of the time of operation is the second, but not nearly so important, factor. It is quite wrong to state that trichlorethylene is injurious to dyed acetate silks. The processing of this class of material is quite successful, providing the properties of trichlorethylene are fully understood, and the cleaning operations regulated accordingly.

Trichlorethylene is now being used in hundreds of cleaning units in this country, so that it is patent that this solvent is not subject to the limitations that many would place upon it. It is the author's view that trichlorethylene should only be used in installations that have been especially designed for its use. Such special installations usually provide for a large supply of warm air for the drying out process, and a rapid flow of such air through the system. Obviously, high temperatures while goods are still in contact with the solvent, must be avoided. One apparatus on the market is able to effect a thorough drying out with a temperature of less than 50 deg. C.

The Burtol system and the Bandbox system dry the goods after cleaning at ordinary temperature, and the success of these systems in the cleaning of acetate silk proves that temperature is the vital factor during the employment of trichlorethylene.

Yet another criticism of the non-inflammable solvents concerns their removal of natural grease from woolen goods with the result that these materials lose handle and become harsh to the feel. It is probable that there is a greater tendency to remove the natural grease on the part of the new solvents, owing to increased and quicker solvent action, than on the part of the petroleum solvents, but whether this constitutes a disadvantage of the chlorhydrocarbons is debatable. It is a moot point whether the disturbance of the natural grease is not a disadvantage of the dry cleaning process as a whole rather than a peculiarity of one class of solvents.

The question of the removal of natural grease is probably allied to that of whether garments become dirty more quickly after dry cleaning. Yet if these two questions are connected, it is curious that the advocates of the non-inflammable cleaning claimed that garments remain clean longer after treatment in the new systems.

To conclude this discussion on the advantages and disadvantages of the non-inflammable solvents, it is obvious that these solvents and the installations for their use have come to stay.

Cellulose Acetate vs Pyroxylin

By George B. Watkins
Director Research, Libby-Owens-Ford Glass Co.

In the June 1933 issue of CHEMICAL MARKETS, page 528, under the caption "Safety Glass," are statements concerning the manufacture of safety glass to which I must take exception. I refer to the statement, "While cellulose acetate offers an advantage in superior resistance to ultra-violet rays, a hitherto insuperable difficulty has appeared in the defective adhesion of a cellulose acetate film to the two outer glass sheets."

The first part of the statement, claiming the greater stability of cellulose acetate plastic towards energy in the form of light and heat over pyroxylin plastic formerly used, is undoubtedly correct. However, the inference that laminated safety glass made with cellulose acetate plastic is characterized by defective adhesion, is indeed misleading and most certainly warrants correction in your journal.

While it is true that the number of bonding adhesives for cellulose acetate plastic—glass laminations are few compared to the number of satisfactory bonding agents proposed or used in the manufacture of safety glass comprising glass sheets and pyroxylin plastic layers; nevertheless, bonding agents for cellulose acetate plastic—glass laminations have been developed and have been in commercial production for well over a year which are not only capable of giving equally as good but more dependable and lasting adhesion than hitherto realized with pyroxylin plastic—glass laminations.

In light of these facts, the statement, "Greater success has attended the application of synthetic resins obtained by polymerization of certain organic compounds (as distinct from condensation products of the Bakelite of pollopas type)," likewise has no justification. I have no knowledge of any substantial quantities of resin—glass laminations used for safety glass; whereas, millions of square feet of laminated safety glass made with cellulose acetate plastic are on the market and substantial quantities of this type of safety glass have been in service for over a year.

Sulfuric Acid

New Market as a Weed Killer

IN THE past, sulfates of copper and of iron have been used for this purpose with effect, but the ideal conditions for their use, namely, twenty-four hours of fine weather following a humid day for the application, were too difficult to realize in practice. When using sulfuric acid, only an hour or so of dry weather at the time of spraying is essential.

Spraying with sulfuric acid originated in France, being largely due to the pioneer work of Rabaté, began in 1911, and it has developed so rapidly that at present several hundred thousand acres are treated annually, involving in 1931 the use of 27,000 tons of acid, while some twenty French manufacturers produce suitable spraying machines for its application.

The work in England fostered by the National Sulphuric Acid Association with the cooperation of the School of Rural Economy, University of Oxford, has reached a stage where it has been handed over to the acid-making industry for practical development. This summer several thousand acres have been sprayed with uniform success and the farming fraternity has evidenced a considerable interest in the novel process.

Application is simple; commercial brown oil of vitriol is mixed with water to give a solution varying from 7 to 10 per cent. in strength, which is sprayed over the land from a suitable machine, either horse or motor-drawn, with acid-resisting parts. It is preferable for the spraying to be done by contract and thus with men used to handling acid, the farmer supplying the necessary traction. About 100 gallons per acre is the normal amount, but the quantity depends upon the size of the charlock and is increased to 150 gallons per acre when advisable.

The time of spraying depends on the size of the plant and not on the time of year. The most favorable moment is when the charlock is in its four-leaf stage, all the seeds having well germinated, but it is effective even when the charlock is several inches high. In a normal year some five to six weeks are available for spraying, so that a contractor can organize his operations so as to keep his machines occupied by moving them from early to late growing regions.

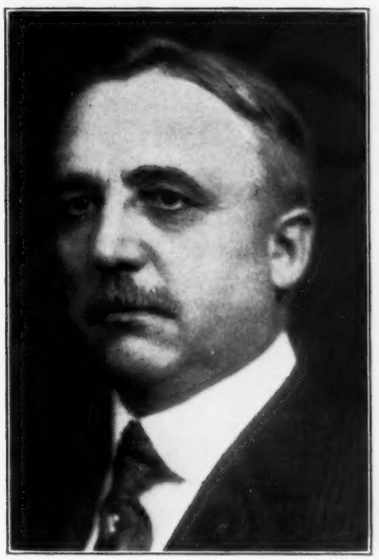
The object of the spray is to kill the charlock, which may turn completely brown within twenty minutes of its application, without harming the cereals. The spray is not selective in its action, which is due entirely to the difference in the physiology and morphology of the two plants. The outer skin of the cereal is thick and not easily penetrated by the acid, which slips off the smooth vertical leaves, except at the tips of the leaves which turn brown, while the tender growing point is protected by the leaves wrapping round it. The skin of the charlock is easily penetrated as the acid adheres to the open, broad, hairy and more or less horizontal leaves, and the tender growing point is exposed so that the tissues are plasmolyzed by the acid and eventually destroyed. In sunshine the action takes place so quickly that within an hour of spraying, the whole field turns brown, a quite alarming sight; in a few days the cereal recovers and it soon presents the healthy and luxuriant appearance which normally follows a top dressing of a nitrogenous fertilizer.

The cost of spraying in England is about 12s. 6d.—15s. per acre, depending on the acreage treated on any one farm; it will be even less when a contractor is fully occupied in a particular district, as much of the cost is occasioned by the transport of the machine. Some 30 per cent. of the cost is due to the sulfuric acid, the carriage of which is also costly. The actual benefits of spraying in the way of increased crop have not yet been fully established: they are claimed to amount in value to as much as £2-£3 per acre in the most favorable cases. The weeds themselves remove nutrient matter from the soil and they crowd the cereal plant, reducing the crop; when killed by acid, their organic matter is returned to the soil, while it is probable that the acid itself may have some effect in increasing soil fertility by accelerating nutrification, though there is no positive evidence on this point.

There is both the immediate gain of an increase in crop and also a reduction of weeds which renders future cultivation more easy: it is stated that, on the Continent, spraying for three or four seasons in succession has resulted in periods of definite freedom from weeds.

The high labor costs of farming, even when mechanical appliances are more largely adopted, can only be countered by an increased yield of the crop. The production of cheap fertilizers has enabled the requirements of the plant in nitrogen and minerals to be satisfied up to the economic point and interest has been transferred to methods of cultivation, in particular the preparation of the soil and subsoil, as most likely to increase further yields. The ill-effect of weeds has assumed an important aspect and their prevention becomes imperative. Until now this has been largely a question of cultivation and it is still the case with the grasses among cereals, but the discovery that a chemical treatment may eliminate charlock and its like, which have been known to lower a crop of oats by one-third, is a definite step forward.

Equipment Makers Organize



DESIGNERS, producers, and erectors of chemical equipment officially joined the NRA procession on August 28 at a meeting held at the Chemists' Club in New York City. Industry is indebted to H. D. Miles, president of Buffalo Foundry & Machine Co. for undertaking the arduous task of initiating and carrying through the first organization steps. Invitations were sent to over two hundred companies in the process equipment field to send a representative to the August 28 meeting. Between forty and fifty responded to the call.

Meeting was called to order by Mr. Miles. After a few preliminary remarks he asked for expressions of opinion from those present. The general sentiment was overwhelmingly in favor of the formation of an association so that the group might adequately be represented; have a self-governing body to act as an intermediary between the industry and the government; and of greatest importance, have in readiness a fair practices policy written by those within the industry and understanding its conditions, rather than one summarily thrust upon it by NRA officials.

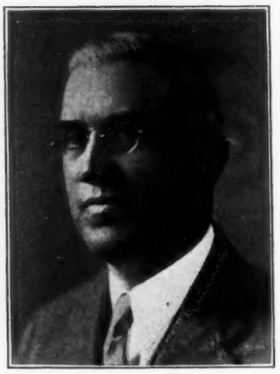
"Mapi" (Metals and Allied Products Institute, newly formed association to serve the metal and metal working groups somewhat along the broad lines being taken by the Chemical Alliance for the chemical and allied industries) was represented by H. E. Christeanson. Briefly he outlined the proposed advantages for the group of affiliation with Mapi. Aid is given in formulating a code and a Washington office is maintained. The charge is ten dollars a member plus a certain assessment which because of the newness of the whole idea cannot be definitely ascertained now but which will be very nominal, according to Mr. Christeanson. Without attempting to act on the suggestion of joining Mapi those attending decided to form an association and a committee was then appointed to draw up a Constitution and a set of by-laws. Members of this committee were: A. E. Marshall, chairman, J. V. N. Dorr, P. C. Kingsbury, D. W. Sowers, F. F. Finch, S. F. Spangler, and S. Alsop. By-laws suggested by the National Association of Manufacturers were largely followed by the committee.

Certain changes were made in the general meeting. The by-laws as adopted are summarized below. Officially the association will be known as the Chemical Engineering Equipment Institute. The initiation fee was set at twenty-five dollars.

Formation of the Institute was officially accomplished by sixteen of the eighteen representatives present empowered to bind their respective companies to joining an association. Those subscribing were: J. V. N. Dorr of the Dorr Co.; D. W. Sowers of the Sowers Manufacturing Co.; S. Alsop of the Alsop Engineering Corp.; Howard Farkas of U. S. Stoneware Co.; J. L. Hutton of T. Shriver & Co.; P. C. Kingsbury of General Ceramics Co.; H. E. Jacoby representing D. R. Sperry & Co.; G. W. Jarman, Jr., Separations Engineering Corp.; F. Dougherty, Jr., F. J. Stokes Machine Co.; S. F. Spangler, Chemical

D. H. Killeffer

At the organization meeting held Aug. 28, the members of the Chemical Engineering Equipment Institute elected H. D. Miles of Buffalo Foundry & Machinery Co., as president and D. H. Killeffer as secretary and treasurer, P. C. Kingsbury of General Ceramics was chosen vice-president.



Two who contributed to the success of the organization meeting. Left, J. V. N. Dorr, President Dorr Co., and D. W. Sowers, President of Sowers Manufacturing Co.

Construction Co.; H. E. La Bour of The La Bour Co.; F. F. Finch, Hardinge Co.; W. H. Scott, Duriron Co.; W. O. Chase of New England Tank & Tower Co.; H. B. Caldwell, Swenson Evaporator Co.; and H. D. Miles of Buffalo Foundry & Machine Co.

Officers were elected to serve until the annual meeting, scheduled to be held in October. Mr. Miles' suggestion that some one permanently located in New York City should lead the group was over-ruled and he was drafted as president. It was then suggested that some one from New York City should serve as vice-president so as to maintain close contact with the secretary's office and Mr. Kingsbury of General Ceramics was duly elected. D. H. Killeffer was then chosen as secretary and treasurer. Directors chosen are: S. F. Spangler, D. W. Sowers, J. V. N. Dorr, H. E. Jacoby, H. E. La Bour, F. F. Finch, S. Alsop, Howard Farkas, G. W. Jarman, Jr., and J. L. Hutton. Those entrusted with the drafting of a code are: James E. Moul, chairman, D. W. Sowers, G. W. Jarman, Jr., S. F. Spangler and J. L. Hutton. The code committee immediately met after the adjournment of the meeting of the Institute and further meetings were arranged for.

The Code Committee at its second meeting came to the conclusion that the work of drawing up a code would be greatly facilitated if the Institute joined Mapi. The Board of Directors (most of the members of which are also Code Committee members) met and formally approved the suggestion that the Institute apply for Mapi membership. A tentative code was then drawn up. It is expected, of course, that a number of changes will be made.

The Secretary has mailed to all known prospective members a copy of the By-Laws, a copy of the proposed code, a list of those who were present at the first meeting, the letter of the Code Committee to the Board of Directors and a covering letter.

The officers particularly are anxious to stress the fact that those companies which joined in forming the Institute are in no sense charter members, or will they enjoy any special privileges.

Membership is open to all individuals, firms, or corporations manufacturing or designing or erecting chemical equipment. A number of those present announced that their companies were already members of one or more groups with codes, but it was generally felt that companies supplying equipment for the chemical and process industries had sufficient common interest to warrant the establishment of the Institute, although all might not be competitive with each other in the same sense that chemical producers are.

Those attending the meeting: James V. McLaughlin, Downington Iron Works, 30 Church St., N. Y. City; James E. Moul, general manager, The Turbo Mixer Corp., 250 E. 43 St., N. Y. City; W. E. Ring, president, Kingsport Foundry & Manufacturing Corp., Kingsport, Tenn.; R. E. Le Mire, J. P. Devine Manufacturing Co., Mt. Vernon, Ill.; J. Credo, vice-president and J. R. Coffey, secretary, Louisville Drying Machinery Co., Louisville, Ky.; H. B. Caldwell, general manager, Swenson Evaporator Co., N. Y. City; H. Leslie Bullock, development engineer, Spray Engineering Co., N. Y. City; A. E. Marshall, Corning Glass Works; H. W. Wheeler, The Griscom Russell Co., N. Y. City; S. Alsop, president, and C. E. Crowley, Alsop Engineering Co.; D. W. Sowers, Sowers Manufacturing Co., Buffalo, N. Y.; Eugene C. Clarke, Bethlehem Foundry & Machine Co.; Ralph M. Torrey, vice-president, Leader Industries, Inc., N. Y. City; W. H. Scott, manager, The Duriron Co., Dayton, Ohio; Walter E. Cox, Sharples Specialty Co., Philadelphia; A. B. McKechnie, Parks Cramer Co., Boston; H. E. La Bour, The La Bour Co., Elkhart, Ind.; Edward J. Taylor, M. W. Kellogg Co., N. Y. City; W. O. Chase, New England Tank & Tower Co., Everett, Mass.; Howard Farkas, vice-president, U. S. Stoneware Co., N. Y. City; Fred M. Klein, representing Maurice Knight, Akron, Ohio; C. P. Devine, president, C. P. Devine Co., N. Y. City; S. F. Spangler, vice-president, Chemical Construction Co.; J. V. N. Dorr, president, Dorr Co.; G. W. Jarman, Jr., president, Separations Engineering Corp., N. Y. City; H. E. Jacoby, representing both D. R. Sperry & Co., and Zaremba Co.; J. L. Hutton, treasurer, T. Shriver & Co., Harrison, N. J.; F. F.

S. Alsop

S. F. Spangler

Members of the Board of Directors of the Institute. Others serving G. W. Jarman, Jr.,

Finch, Hardinge Co., York, Pa.; P. C. Kingsbury, General Ceramics Co., N. Y. City; F. Dougherty, Jr., F. J. Stokes Machine Co., Philadelphia; C. C. Bryant, Filtration Engineers, Inc., Newark, N. J.; W. A. Peters, E. B. Badger & Sons Co.; J. F. Mitchell Roberts, Oliver United Filters, Inc., and H. D. Miles, president, Buffalo Foundry & Machine Co., Buffalo, New York.

The following are abstracts of important sections of the By-laws adopted:

Article III

Object and purposes

Section 1—The object of this Institute shall be to protect, promote, foster and advance the interests of the members, as manufacturers, designers, erectors and/or distributors of chemical engineering equipment; to increase the use of such equipment; to improve the conditions under which the industry is carried on; to develop fair and just competitive methods; to perfect machinery for the peaceful settlement of disputes between members, or between them and their customers; to protect the industry against unfair and unjust burdens and exactions; to collect and disseminate pertinent data relating to the industry; and generally to do such things as may be necessary to the foregoing results.

Section 2—The Institute is not organized for pecuniary profit and shall not declare dividends or other financial distribution to members.

Article IV

Membership

Section 1—Any individual, firm or corporation engaged in the manufacture, design, engineering erection and/or distribution of chemical engineering equipment within the United States and whose application is approved by the Board of Directors, may become an active member of this association.

Section 2—Whenever active membership is held in the name of a firm or corporation, one individual representing the firm shall exercise the voting power of the membership and his name shall be certified to the secretary of the Institute.

Section 3—Any active member may be represented and vote at any meeting by properly authorized proxy. Such proxy shall be an active member of the Institute or directly associated with the firm or corporation he represents. No officer or employee of the Institute shall act as a proxy.

Section 7—Members who fail to pay the annual dues prescribed by these by-laws may at the discretion of the Board of Directors be suspended by a two-thirds vote of the Board and shall for the period of suspension forfeit all the rights and privileges of membership in the Institute.

H. E. Jacoby

Howard Farkas

are: J. V. N. Dorr, D. W. Sowers, H. E. La Bour, F. F. Finch, and J. L. Hutton

(a) In addition to suspension from membership for failure to pay dues prescribed, any member may for cause be suspended or expelled. Such suspension or expulsion shall not be voted except by a two-thirds vote of all the elected Board of Directors and after the member shall have been furnished a full statement of the charges against him, and been provided adequate opportunity for hearing thereon. Among the grounds for suspension or expulsion shall be the following: Violation of any by-law of the Institute or of any rules lawfully made by or under the authority of the Board of Directors; Violation of any code or trade practice or fair competition subscribed to by the industry and approved by any duly authorized governmental agency; Conduct prejudicial to the best interest of the Institute of which he is a member.

Article VII

Board of Directors

Section 1—There shall be a Board of Directors of not less than nine or more than twelve members to be elected as hereinafter provided, and to serve one year. Thereafter one-third of the Board shall be elected for three years, one-third for two years and the remaining third for one year.

Section 2—The Board of Directors shall constitute the governing body of the Institute. It shall be vested with full power and authority to put into effect the laws, resolutions and decisions of the Institute and by a two-thirds vote of the elected directors to make, alter or amend By-Laws not in conflict with law for its own government and that of the Institute; to appoint an Executive Committee which shall consist of the President, Vice-President and not more than three members, and to delegate to such Committee the full powers of the Board of Directors during the interim between its meetings, to fill all offices for the unexpired terms thereof, to exercise general supervision over the receipt and expenditures of the Institute; to appoint employees and other agents of the Institute and to define their duties, and to define the duties of its officers, other than as defined herein; to fix the compensation of employees and agents of the Institute and to do all other acts and things which it may deem to be to the interest of the Institute.

The Board of Directors or Executive Committee may in their discretion submit to the members of the Institute, by letter-ballot, any question relating to the affairs of the Institute. Not less than thirty days shall elapse between the mailing of such letter-ballot, and the closing of the poll thereon. The question submitted shall be stated in a form approved by the Board of Directors or the Executive Committee and accompanied by a brief summary of the arguments for or against the proposal. The ballot cast shall be counted by tellers appointed by the President. A majority of the vote cast shall be regarded as a binding instruction to the officers of the Institute provided that not less than fifty-one per cent. of the qualified members of the Institute participate in the vote.

Provided, further, that nothing in this section shall be construed to prevent the commitment of the Institute upon matters of public policy by a majority vote of the members present at any annual or special meeting of the Institute.

The Board of Directors shall determine the expenditures of the Institute and may, in advance, apportion and appropriate the amount thereof to the several departments of the Institute, based upon a conservative estimate of the receipts thereof, but shall not authorize expenditures to exceed ninety (90) per cent. of such estimated receipts.

The Board of Directors may, when occasion requires, by a two-thirds vote of its members or four-fifths of the Executive Committee, authorize the borrowing of money in behalf of the Institute to provide for its temporary needs.

Recent Practical Adaptations of Rubber Lining for High Temperature Service

By Dr. H. E. Fritz

Manager Chemical Sales Division, The B. F. Goodrich Rubber Co.

RUBBER constructions, now acknowledged as being most practical for steel pickling operations, are being applied increasingly in many chemical processes where high temperature and rough service are encountered.

As in the case of aluminum, rubber has been drafted into use in countless new fields. But just as the manufacturing processes of aluminum are determined by the particular characteristics of the finished product, so must the application of rubber lining be made with the particular service requirements firmly in mind.

There is no one rubber stock which will fit the needs of industry and it is generally safe to say that no two installation problems are alike. Therefore, every problem in rubber lining is a specific, rather than a general, problem and must be studied with reference to the specific rubber and installation requirements.

For a long time it was general practice for technologists to evaluate the merits and limitations of two types of rubber—hard and soft. They had to interpret the requirements of each installation in the light of varying temperature, liability of shock, impact or gouging and abrasive wear. Because both hard and soft rubber had disadvantages, it was necessary to choose the stock with the greatest advantages and gamble on these offsetting its apparently unavoidable disadvantages.

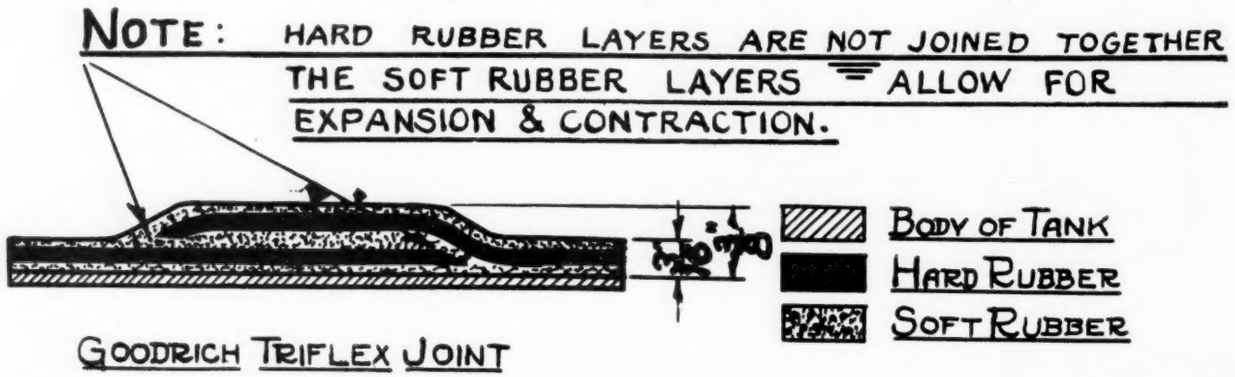
It is easy, therefore, to imagine the far reaching benefits gained when engineers produced a practical construction which successfully combined the two types. It is this development which is responsible for the widely varied adaptations of rubber-lined equipment in the chemical and allied industries today.

Modern construction calls for a layer of hard rubber cushioned between two layers of soft rubber. Suitably-spaced overlapping expansion joints are effective in preventing crackling or bucking of the hard layer under expansion and contraction with temperature changes. The principle involved is illustrated by Figure 1.

The three-ply construction has proved remarkably immune to physical damage by shock, impact or gouging. It combines the resistance of hard rubber to chemicals having solvent action, diffusion and absorption, with the resilience and wear-resisting qualities of the soft rubber face layer. The relative thickness of the three plies may be varied within wide limits to obtain the desired properties for each type of service. Sudden variations in temperature, which are often hazardous to ordinary hard rubber linings, have no adverse effect on the three-ply construction.

Steel is perhaps the most common, but by no means the only, structural material to which this construction can be bonded. Although its chief application is tank lining, it is proving itself equally effective in lining

Figure 1—Triflex Expansion Joint



pipes, valves, fittings, drums, pumps and rotary grinding mills.

It is now possible, for certain types of chemical process equipment, practically to remove the temperature limitation by combining rubber with other engineering materials. Figure No. 2 shows a typical

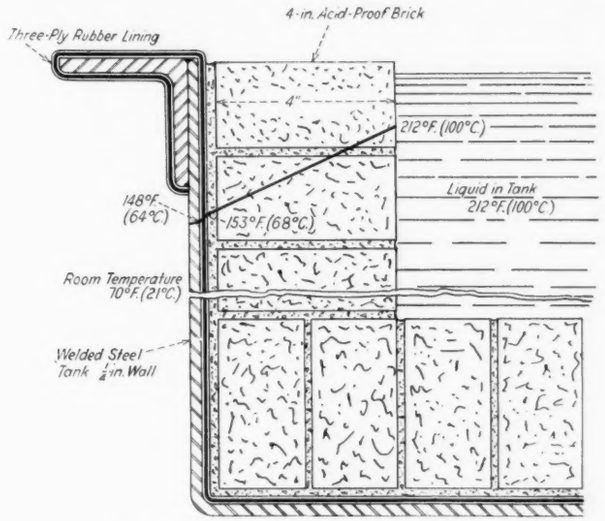


FIG. 2.—Temperature Gradient Brick Insulated Tank.

section through the wall of a brick sheathed tank and indicates the temperature drop to be expected through the brick sheathing to the surface of the rubber. Three-ply rubber lining combined with brick sheathing is constantly opening up new markets for chemically resistant rubber. Tanks of this design are now in use in chemical processes involving the use of highly corrosive materials at temperatures up to 250°F. Wood sheathing may replace brick as a means of physical protection for the rubber lining but does not offer nearly as much value as a heat-insulating material in cases where the temperature of the liquid exceeds 150°F.

The following list is suggestive of operations in which this new construction has been or can be applied to advantage.

Manufacture of ferric chloride, zinc chloride, ferrous sulfate, (copperas), nickel sulfate, alums, tungstic oxide, aluminum chloride, zinc sulfate, barium chloride, tin chloride, antimony chloride
Neutralization of waste pickle liquors
Leaching of barytes
Leaching of copper, lead and zinc ores
Plating tanks
Evaporation of salt brines, aluminum chloride, aluminum sulfate, etc.
Acid absorption towers in chemical plants
Keirs for textile industry
Ash handling systems (power plants)
Saturators for manufacture of ammonium sulfate

It was not so long ago that most of these operations were considered far too severe for rubber linings but the development of three-ply construction combining the advantages of both hard and soft rubber; and the use of brick sheathings, wherever necessary, have made such installations thoroughly practical from every viewpoint.

Alcohol Dehydration

The production of absolute alcohol by the Hiag process, states the "International Sugar Journal," is an up-to-date method of dehydrating alcohol, based on the proposals of Gorhan (patented in all the principal countries). It employs a suitably chosen mixture of salts which can be handled as easily as aqueous or alcoholic solutions of the salts. During its circulation, the dehydration of the alcohol and regeneration of the salt mixture proceed entirely automatically without difficulty.

It has been possible to develop a plant of the greatest possible simplicity, the cost and space requirements of which are correspondingly smaller than with other processes. The non-volatile salt solution does not pass into the absolute alcohol. More than this, any impurities which may be present in the spirit are retained, so that dehydration is accompanied by the simultaneous purification of the end products. No production of dilute alcoholic fractions occurs, the whole of the spirit being obtained in a single process as absolute alcohol. Reflux to the dehydration column is necessary only in so far as it is required to keep the salts in solution.

Adaptability to Low-Strength Spirits

Spirit of low strength can be treated without materially increasing the steam consumption. The Hiag process is already in use in a large number of installations having daily outputs of 200-600 hectolitres (4,400-13,200 gals.) of absolute alcohol. It has been thoroughly tried, and has given excellent results in continuous working.

Costs of production, including steam, cooling water, electric power, wages, maintenance, depreciation, and interest have been worked out in detail, and (for European conditions) may be summarized as follows per 100 Imperial gallons of absolute alcohol:—

Raw Material	*2200 gals. daily* s.	d.	*6600 gals. daily* s.	d.	*13200 gals. daily* s.	d.
Neutral spirit, 94 per cent. by weight.....	2	3½	1	8½	1	5¼
Mash, containing about 10 per cent. alcohol	8	6	6	8½	5	11½
Ditto, but using mash containing less heads.	7	3½	5	5¾	4	8¾

The plant may be so adapted to existing rectifying installations that absolute alcohol is obtainable from mash in one operation.

Equipment Notes

Hydraulic Press Mfg., Mount Gilead, Ohio, has developed a line of standardized H-P-M Hydro-Power Units to facilitate application of the new H-P-M Radial, Oil Pressure Pumps to various types of hydraulically actuated machines.

Each Hydro-Power Unit incorporates an H-P-M Radial Pump Pressure Generator, direct driven from an electric motor through a flexible coupling. Both pump and motor are mounted on a base which is made of steel plate, neatly formed and welded. This is completely enclosed so as to also serve as a reservoir for the oil used as pressure fluid and lubricant. This reservoir is completely equipped with all essential accessories including removable and cover, covered filling strainer, air vent filter, level gauge and drain valve. It is also fitted to take a copper coil for cooling water circulation when operating conditions require auxiliary oil temperature regulation. Complete details are available.

Bottle for testing solid, semi-solid, or viscous substances for percentage of fat or oil has been designed by Charles Paley, 19 Hudson st., N. Y. City. Bottle is provided with an opening sufficiently large to permit lumpy, thick, or viscous materials to be deposited directly on the bottom without difficulty, using a stirring rod to spread the material over the entire bottom.

Acid-Resisting Enamels

By Dr. Ludwig Stuckert

SO FAR, the production of enamel linings, highly resistant to acids, has been completely successful only with cast iron. This is due largely to the fact that the cubical coefficient of expansion of cast iron lies nearer to that of the enamel employed than does the coefficient of sheet iron. Quite recently it has been found possible to line sheet iron with a relatively acid-resistant enamel, but the corrosion resistance in this latter instance is by no means equal to that obtained in the case of cast iron.

In any event, as the changes in the coefficient of expansion of the iron and the enamel mass do not produce parallel curves when plotted over a range of temperatures, the enamel must be so chosen as to possess a certain degree of elasticity. It is not usually possible to calculate the elasticity of the finished enamel from a knowledge of the components to be used in the frit, so that only practical experience can settle this point.

In general, the resistance to acid of these enamels increases with their rising content of silicic acid, but this relationship is not a linear one, as the curves on plotting show distinct minima and maxima. The influence of basic oxides follows, with few exceptions, the affinity which those bases have in the free state for both water and acids. Sesquioxides such as alumina are consequently valued ingredients of highly acid-resisting enamels. Boric acid, which is such a general ingredient of ordinary enamels, is not a desirable constituent of the enamels under consideration. It is usually employed for the working properties which it confers upon the enamel frit, but its proportion in the mixture should be kept as low as possible. Another point in the selection of enamel ingredients is the solubility of the salts, which may be formed by the attack of the acids. Sodium fluoride is very soluble in water, and in the event of the enamel being at all attacked by acids, this fluoride is readily leached out, leaving the enamel very susceptible to further attack. Consequently both sodium fluoride itself and cryolite should be excluded in the formulation of highly acid-resisting enamels. The addition of clay also lowers the chemical resistance of these materials, and the material should be used as little as possible. The most satisfactory acid-resisting enamels are obtained by employing mixes as close in composition to those of Jena laboratory glass as possible. Typical compositions are given.

Ingredients of Acid-Resisting Enamel

	I	II	III
Quartz	47.3	52.5	55.8
Felspar	22.4	19.1	17.5
Soda	29.8	32.0	33.0
Marble	16.8	13.7	13.4
Boric Acid	6.2	3.5	....
	122.5	120.8	119.7

Percentage of Bases

SiO_2	62.0	65.1	67.2
B_2O_3	3.5	2.0	....
Al_2O_3	4.1	3.5	3.2
K_2O	3.1	2.6	2.4
Na_2O	17.9	19.1	19.7
CaO	9.4	7.7	7.5
	100.0	100.0	100.0

Enamel I has a cubical coefficient of expansion of 322.8×10^{-7}, II of 321.4×10^{-7}, and III of 342×10^{-7}.

Lead oxide and similar poisonous metallic oxides are not used today in the production of acid-resisting enamels. Further points to be observed are the adequate fineness of grinding of the raw materials, their intimate admixture, and the uniform fusion of the enamel at a high temperature.

The information given in the literature as to the most suitable composition of a cast iron for the purpose of enamelling is rather conflicting. There is, however, general recognition of the fact that the carbon content should lie between 3.2 and 3.5 per cent.; the phosphorus content between 0.8 and 1.3 per cent.; the manganese content between 0.5 and 0.8 per cent.; the sulfur content between 0.08 and 0.11 per cent.; and the silicon content between 2.2 and 2.6 per cent. The manganese and sulfur are the really undesirable constituents, since they stabilize the iron carbide, the presence of which leads to the formation of blowholes. Silicon, on the other hand, influences favorably the decomposition of the iron carbide into graphite and ferrite, and is consequently

a necessary and advantageous constituent. As a rule, a content in cementite of over 90 per cent. is desirable in cast iron that is to be enamelled.

The preliminary surface treatment of the iron before enamelling is most important. Not only the gross irregularities, but all surface impurities should as far as possible be removed. The usual method employed today is the sand-blast, using a mixture of relatively coarse sand and steel scrap, blown at a pressure of four to six atmospheres. It is necessary that this cleaning process be applied as soon as the casting has cooled, and it is a frequent practice for the castings to be heated to a dull red after the sand-blasting, this heating particularly favoring the decomposition of the iron carbide.

The technology of the application of the acid-resisting enamels differs from that of the ordinary enamelling process only in regard to the final coat; in both cases the application of the ground coat is the same. This ground enamel, the so-called frit, is chosen so as to have a wide temperature softening interval, and consists usually of two parts of ground flint and one part of borax, with small quantities of felspar and fluorspar. This ground mass is applied to the cast iron by the wet process, and is burned on at a temperature of about 1,000° C. It is white, and makes a very firm bond with the metal. The wet covering enamel, finely ground, is sprayed on to this frit, and it is advantageous to incorporate a little clay in the grinding mill. On to the layer of wet coating enamel there is sieved a fine powder, closely similar in composition to the enamel itself, after which the coating is thoroughly dried. This application process is generally repeated several times.

Burning and Cooling Operations

The temperature of burning depends upon the fusibility of the enamel, and is usually about 1,000° C. Burning is usually effected in muffle furnaces, but in the case of very large pieces, in non-muffle furnaces of special construction. According to German Patent 478,632, burning is effected in an electric furnace under vacuum; by this means the formation of bubbles is stated to be completely avoided. Numerous highly resistant enamels give a surface of comparatively dull lustre, and it is sometimes the practice to give a final coat of highly lustrous enamel. This latter usually is not very resistant to acid, and is dissolved off when the vessel is put into use. The enamelled pieces should be cooled very slowly. If the cooling is too rapid, owing to the comparatively poor heat conductivity of the enamel, stresses are set up which lead to the formation of surface cracks. Really well-controlled cooling improves the acid resistance of the mass, for it is a well-known physical-chemical principle that has been confirmed in practice, that badly cooled glasses are less resistant to the leaching action of liquids than are well-cooled glasses.

Company Booklets

Bakelite Corp., 247 Park ave., N. Y. City. New booklet, "The Versatile Service of Bakelite Resinoid" is really a short history of the plastics industry and Bakelite products. Bul. No. 23.

Boonton Molding, Boonton, N. J. This company has performed a worthwhile service in preparing "A Ready Reference for Plastics"—a brief description of the commonly used plastics compiled for the guidance of Engineers and Buyers. An exceptionally valuable reference book for those connected with plastics field. Bul. 24.

Howards & Sons, Ltd., Ilford near London, England. A 36 page booklet describes several new and interesting solvents and plasticizers some of which are not produced in this country. Bul. 25.

International Selling, 70 Pine st., N. Y. City. A new booklet which describes the Pechiney brand—trichlorethylene—an important non-inflammable solvent of many varied uses. Bul. 26.

R & H Chemicals Dept., du Pont, Wilmington, Del. Quarterly price list shows important price changes buyers should become acquainted with. Bul. 27.

R & H Chemicals Dept. "Fumigation of Industrial and Domestic Structures by Means of Cyanegg" gives special attention to fumigation of dairies and cheese factories. Bul. 28.

Equipment Booklets

Driver-Harris, Harrison, N. J. A 60 page beautifully illustrated catalog on "Nichrome"—data on alloys made by Driver-Harris Co. Complete engineering data are given. A charge of 25c is made.

General Electric, Schenectady, N. Y. GEA-1771 describes type TSA-10 automatic timer—Telechron-motor-operated. Bul. 29.

International Nickel, 67 Wall st., N. Y. City. Bulletin T-6 gives technical information on caustic alkalies vs. nickel and its alloys. Bul. 30.

Link-Belt, 910 S. Michigan ave., Chicago, Ill. One of the most attractive booklets that has been released in months. It features "The Century of Progress" and gives valuable data on Link-Belt products. Bul. 31.

McLeod & Henry, Troy, N. Y. B-122, a 16-page booklet, describes their new "Steel Mixture" OIL brand firebrick for oil-fired furnaces, CARBEX silicon-carbide brick for boiler, stoker and industrial furnace linings, high temperature fire cements, furnace linings and arches, etc. It contains information of value to purchasing agents, chief engineers and plant managers on the selection and care of firebrick furnace linings. Bul. 32.

Patterson Foundry & Machine, East Liverpool, Ohio. "Acid-Proofing for New & Old Containers" describes the use of "Porox" for linings wherever corrosion problems in plants arise. Bul. 33.

Chemical Markets,
25 Spruce Street,
New York City.

I would like to receive the following booklets specify by number, viz. Bul. 1; Bul. 6, etc......

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Sept.

New Products and Processes

Magnesium Sulfate in Flotation

During recent experimental flotation research work in Australia, it was noted that magnesium sulfate acted as an activator for marmatite. Susbequent experiments showed that it may be used in conjunction with copper sulfate and a suitable frothing agent such as eucalyptus oil, to produce a concentrate of the above mineral, thereby replacing some of the more costly reagents now employed for this purpose. For small-scale work, magnesium sulfate in the proportion of about 1 lb. per ton of flotation feed was used.

Painting Walls With Paper

Announcement of a new type of wall paper introduced on the German market known as liquid wall paper has been given out. This product is used in place of the usual relatively expensive paper or wall paint and is reported to last much longer than any of them.

Loose and unbound paper fibres are used for this purpose, being delivered in the form of a thick paste and thinned, for applying on walls, with ordinary glue paints. All kinds of colors and shades are obtainable, while various designs are also possible. This new wall cover is reported to be very elastic and durable after drying, and does not peel off.

New Rayon Process

A process for making rayons of whatever type as hardy as fabrics made from silk, cotton or wool has been reported. The claim is made that any rayon fabric processed with the new method can be hot ironed without spoiling, or soaped and washed in either hot or cold water and then hot ironed, because the process makes all rayon fabrics heat proof. An interesting feature is that after it is applied rayons will react to similar tests as fabrics made from other textile fibres. Thus, it is claimed by the process, that rayons are capable of receiving the same treatment as other fabrics.

Wood Hydrolysis Products

The latest developments in the field of carbohydrates and proteins as products of wood hydrolysis indicate the possibility of obtaining a combined carbohydrate-protein cattle feed with the aid of the so-called wood sugar yeasts. The latter, it has been discovered, are capable under certain conditions of fermenting aqueous sugar solutions and of utilizing inorganic nitrogen in the synthesis of albumen. A comparatively large output of "fodder yeast" has now been achieved by growing these yeasts in wood sugar solution and the nitrogenous product of wood sugar yeasts are found to be equal in digestibility to those from beer yeasts.

Feed-Water Softener

A method for softening the feed-water of high-pressure boilers, recently patented, involves the use of ammonia and disodium phosphate, by which means, it is claimed, a higher softening effect is attained at a lesser cost than by using sodium carbonate and trisodium phosphate. The chief advantage is that the undesirably high alkalinity of the water in the boiler and the acidity of the condensate are eliminated. The ammonia driven off with the steam is partly recovered in the condensate. Experiments conducted by the inventor and his collaborators show that the corrosion of steel sheets in steam under a pressure of 20 atmospheres above a dilute solution of sodium bicarbonate is reduced to less than one-tenth when a small amount of ammonia is added to the solution. Sheets of brass showed no corrosion in vapors from feed-water treated with ammonia.

Thallium Compounds in Photography

Compounds of thallium are likely to find some use in photography, for it has been found that thallium halide made into an emulsion with silver halide has an important effect upon the properties of the emulsion. In the case of silver iodide the presence of thallium iodide strongly increases the general sensitivity and the chromatic sensitivity. This action of thallium seems to be specific.

Fly Spray Base

It is claimed that fly sprays, made with hydrogenated tar oil or synthetic oils or their distillates are free from the usual lasting odor of the ordinary fly spray. The new bases evaporate rapidly and do not stain articles in contact with them. Furthermore, the insecticidal activity of the pyrethrum or the like, dissolved in the hydrogenated tar oil, etc., is not impaired or retarded.

A highly active fly spray is made by dissolving 15 per cent. of phenyl salicylate in 85 per cent. of a hydrogenated lignite tar oil of sp. gr. 0.789 and boiling point range 158 to 280 degrees C. This product is made by hydrogenating a strongly unsaturated lignite tar oil at 390 degrees C. with hydrogen under 200 atmospheres pressure in the presence of tungstic sulfide used as catalyst. In another example twelve per cent. of pyrethrum flowers are extracted in cold for 24 hours with hydrogenated solvent benzene. Then the flowers are filtered off and 3.5 per cent. of 5-chloro-2-oxybenzoic acid amyl ester is added as well as two per cent. of isoborneol acetate to perfume the spray.

Sulfur-Dioxide—Antiseptic

The value of freshly made dilute solutions of sulfur dioxide as a disinfectant has been under investigation. The experimenters dissolved 10 grammes of sodium hyposulfite in one litre of warm water and added 1.5 cc. of concentrated sulfuric acid. The solution became turbid owing to the precipitation of sulfur. Instead of the sulfuric acid sodium bisulfate can be used, and the disinfectant trials were carried out with solutions made by the latter process. An improved bactericidal effect was noted, particularly on staphylococci. The solution, it is suggested, should be useful as an antiseptic for wounds and in surgical operations. The authors have injected doses of from 0.5 to 20 c.c.'s of the solution subcutaneously and intravenously into dogs without any harmful effect being observed.

Colored Bituminous Paints

The chief difficulty in the preparation of bituminous paints is in the retarding effect possessed by natural bitumen on the drying oils. The addition of 5 per cent. of bitumen to boiled linseed oil increases the drying time of the oil from ten hours to three days and over. It is necessary to use a high content of drier, but fortunately this does not have any unfavorable effect upon the useful life of the dried film. The choice of pigment is limited. High tinctorial power is essential, while high gravity pigments are necessary to avoid surface floating effect. A new bituminous paint recently put on the market contains as pigment either bronze powder or aluminum powder. For white paint calcium fluoride is generally used, and for blue paint cobalt blue.

Bleaching Composition

For use in bleaching, solid stable addition products of sodium hypochlorite and inorganic salts capable of combining with water of crystallization such as sodium phosphates, sodium metasilicate, or soda are obtained by melting the salts in their water of crystallization and mixing the molten mass at 90-125° C., with sodium hypochlorite solutions, solidification being effected by surface cooling, as by running the mixture on to cold surfaces or cooled rotating drums. The salts employed may be partly dehydrated during fusion, or have added to them partially or wholly dehydrated salts.

Chemical Reader's Digest

Solvents

Ever and anon, in fact, for the past fifteen years, writes John McE. Sanderson, there has been so much discussion regarding the use of alcohols for beverage purposes, that the quite important fact that they constitute one of the most important group of solvents has been quite thrust aside. Yet during the same period the paint industry has increased its use of them tremendously, not only in volume but also in variety. We have available and in regular use improved grades of denatured ethyl alcohol, which leads in volume consumed in varnishes and lacquers; with butyl alcohol, a chemical curiosity twenty years ago, second place in this field. Methyl and amyl alcohols continue next in importance, with a score of others used in smaller volume in various specialties.

The growth in the use of lacquers has been accompanied by a corresponding development in the use of alcohols. As a group they are classed as latent rather than active solvents for nitrocellulose, but become activated by the true solvents so that such mixtures have substantially the same solvent strength as an equal amount of the true solvent alone. In the description of individual alcohols given there is usually a maximum proportion of alcohol to corresponding ester solvent at which the greatest toleration for hydrocarbon diluent is obtained.

A point of particular interest in lacquer formulation is that the alcohols, in general, evaporate at a very much slower rate than the corresponding acetates, although the opposite might sometimes be expected from their boiling points. The physical characteristics of commercial grades are listed. *Paint, Oil & Chemical Review*, June 15, 1933, p. 8.

Lime in Enamels

Little is found in the enamel literature regarding lime as a helpful agent in promoting acid and alkali resistance and aiding opacity, for it has been discovered that it is not harmful as commonly supposed. The conception of lime as an indispensable constituent of enamel, just as in glass, has been thoroughly disproved in practice. It has been shown that even acid-resisting enamels may be produced without lime, and even without alumina and that, actually, silica is the only indispensable refractory component. The assertion that lime makes enamel brittle is true only in so far as it applies also to silica and alumina. The enamel failures which are frequently attributed to the actual or perhaps only supposed lime content are always due to other causes. When a cover coat enamel containing lime suddenly begins to chip off at the edges, after having previously proved itself as a good enamel, then the lime cannot be held accountable for the failure. Rather the cause should be sought in the production of the enamel, in a possible change in the composition of the raw materials, or in mistakes of the fabricating process, according to Dr. Richard Aldinger.

The melting point of lime is exceptionally high, and the lime-silicates formed are also higher than the melting point of most enamels. Therefore lime cannot be considered as a valuable fluxing agent and may be used only in small amounts in easily melting enamels. The real field for lime lies mostly in enamels capable of resisting water, acids, lye, and strong alkalies and for the highly acid-resisting enamels for chemical ware. Since the expansion coefficient of the iron-enamel must be kept within narrow limits and since it is often difficult to obtain the necessary expansion for resistant enamel without reducing the resistance by the introduction of too much alkali, lime should be considered as a material well adapted to increase the expansion coefficient. Years of experience show that lime used in ground coats up to 10 per cent. and in cover coats from 6 to 8 per cent. is a valuable raw material. *Keramische Rundschau*, July, 1933.

Ultramarine

A comprehensive description of the actual manufacture by J. Stewart Remington, who has had many years' experience in the production of this pigment, deals with the history of ultramarine, and reviews the early attempts to produce and to determine its composition. Prior to the discovery of artificial ultra blue, the only source of ultramarine was the mineral lapis lazuli, a crystalline composed of silicate of alumina, lime, and soda, with iron and sodium as sulfides. As mined, the mineral is frequently found in an impure state with slate or contaminated with other mineral, many specimens being spangled with iron pyrites. The finest specimens come from Tibet, but lapis is also found in China, Siberia, and Persia.

The preparation of the natural product receives consideration and the early attempts at synthesis are traced as far back as 1828 when ultramarine was first prepared on a commercial scale. In that year the Societe d'Encouragement of France offered a prize of 6,000 francs to anyone who could produce ultramarine at ninety shillings a pound, and this was gained by M. Guimet who later communicated his recipe to Gay-Lussac. Working quite independently at the same time in his laboratory Leopold Gmelin of Tubingen discovered how to prepare ultramarine, thereby earning the title of the "Father" of the ultramarine industry. Today the quality has been much improved due to the scientific study of the subject, so that at the present time the various grades produced here may be said at least to equal the best continental brands. The constitution and chemical formulas of different chemists and the various theories evolved during experiments complete the review. *Paint Manufacture*, July, 1933, p. 190.

Flexible Resins

Previous literature, say R. H. Kienle and P. F. Schlingman, has described three general classes of alkyd resins; namely, heat-nonconvertible, heat-convertible, oxygen-convertible; and it has been proved that hard, soft, or balsam-like resins could be prepared in each class. The physical property of flexibility has now been improved so that resins are possible possessing flexibility down to a temperature of approximately 5° C. In a small way, flexible alkyd resins were available before; but certain flexible effects were obtained in the heat-convertible alkyd resins by using definite dibasic aliphatic acids, and it is well-known that the oxygen-convertible alkyd resins become more flexible as the oil-glyceride content of the alkyd resins is increased. However, these properties are only temporary, as all these modified resins when aged at the higher temperature—e.g., over 100° C.—rapidly lose their flexibility and become fairly rigid owing either to continued polymerization or oxidation. It has been possible not only to produce flexible alkyd resins but to control the degree of flexibility as well within the temperature limits specified. With this action a certain plasticity was observed to have been simultaneously introduced allowing compounding on rubber rolls, calendering, and pressing of the more flexible forms. The general theory of synthetic resin formation is given attention, as well as the preparation and properties of permanently flexible alkyd resins, which are shown to have industrial possibilities as film-forming materials in the paint and varnish industry, and as a celluloid substitute or as an artificial rubber in the plastic industry. *Industrial and Engineering Chemistry*, Sept. 1933, p. 971.

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Chemical Facts and Figures

Chile's Problem

The break-up of the world nitrate conferences in Paris in the past month brings to a critical point the various difficulties that have beset the Chile nitrate industry over the last few years. The newly reorganized Chilean industry is faced with the pressing problem of excessive stocks. These stocks at the end of 1932 were estimated at 2,000,000 tons in Chile; 1,000,000 tons in Europe, mainly England, and about 350,000 tons in the U. S. Much of this nitrate in storage is mortgaged to banks against loans. Unless there is some solution of the problem, therefore, that would open certain markets to Chile and provide an income to the government the obvious alternative might be the dumping of the product for what it would bring. The effect of this for the time being would be serious for other large nitrate producers.

Since under current conditions the management authority of bondholders and stockholders of Cosach for all practical purposes has been wiped out, the decision as to what course to pursue lies with the Chilean government which has been struggling against heavy odds to maintain its chief source of revenue.

Consumption vs. Production

Following table shows world consumption and production, given in metric tons of pure nitrogen, of the various forms of nitrogen bearing compounds in recent years ended June 30:

Production	*1932*	*1931*
Sulfate	785,591	708,681
Cyanamid	134,104	200,932
Syn. nitrogen	353,320	393,150
Chile nitrate	170,000	250,000
Total production	1,553,704	$694,288
Consumption		
Manufact. nitrogen	1,421,580	1,377,005
Chile nitrate	138,208	244,300
Total	1,559,788	1,621,305
	1930	*1929*
Sulfate	866,540	861,000
Cyanamid	263,800	192,000
Syn. nitrogen	427,300	383,000
Chile nitrate	464,000	490,000
Total production	2,203,540	2,113,000
Consumption		
Manufacturing nitrogen	1,586,904	1,452,630
Chile nitrate	363,893	419,450
Total	1,950,797	1,872,080

Since 1925 production of ammonium sulfate and of synthetic nitrogen generally in the form of nitrate of soda has steadily increased while production and consumption of Chile nitrate has decreased. Thus in 1925 output of sulfate was 533,300 tons of pure nitrogen, against 785,591 tons last year. Output of synthetic nitrogen was 66,100 tons in 1925, against 353,320 last year. In the 1925 year production of Chile nitrate was 367,500 tons of pure nitrogen.

Only about 60,000 actual tons of Chile nitrate were imported into U. S. in 1932 against 617,000 tons in the previous year. In 1932 the U. S. exported 175,000 tons of synthetic nitrate of soda practically all of which came from Allied's Hopewell.

According to information from Santiago changes in the Government's nitrate plan are demanded by a number of deputies, in conjunction with a delegation from the northern nitrate provinces, who held a joint meeting. Requested changes are (1) complete reconstruction of the nitrate industry on a clearly national basis; (2) freeing of the industry from all debts incurred by the companies included in the Cosach group; (3) use of the Shanks process, to give work to the greatest possible number of workers; and (4) full protection for nitrate workers.

COMING EVENTS

American Chemical Society, Chicago, Week of Sept. 11.

Canadian Gas Association, Ottawa, Sept. 18-19.

National Petroleum Association, Annual Meeting, Hotel Traymore, Atlantic City, Sept. 20-22.

National Association of Retail Druggists, Chicago, Hotel Sherman, Sept. 18-22.

Societe 'de Chemie Industrielle, Lille France, Sept. 24-30.

American Association Natural Gas Dept., Chicago, Sept. 25.

American Society of Municipal Engineers, Chicago, Sept. 25-27.

Technical Association of the Pulp & Paper Industry, fall meeting, Appleton Wis., Sept. 26-28.

American Association of Textile Colorists & Chemists, South Central Section, Knoxville, Andrew Johnson Hotel, Sept. 30.

National Metal Congress and Exposition, October 2-6.

Twenty-second Annual Safety Congress, Hotel Stevens, Chicago, Oct. 2-6.

American Welding Society, Hotel Book-Cadillac, Detroit, Mich., Oct. 2-6.

American Bottlers of Carbonated Beverages, Annual Meeting, Louisville, Ky., Oct. 9-13.

American Oil Chemists' Society, Congress Hotel, Chicago, Oct. 12-13.

American Petroleum Institute, Chicago, Ill., Oct. 24-26.

Federation of Paint & Varnish Prod. Clubs, Edgewater Beach Hotel, Chicago Oct. 26-28.

National Paint, Oil & Varnish Association, Edgewater Beach Hotel, Chicago, Oct. 27-30.

American Paint & Varnish Mfr's. Association, same dates and place.

Master Photo Finishers of Am. & Photo Finishers Institute of Am., Cincinnati, Nov. 13-17.

Exposition of Chemical Industries, Grand Central Palace, N. Y. City, Dec. 4-9.

American Society of Mechanical Engineers, N. Y. City, Dec. 4-9.

Fifth National Organic Chemistry Symposium, Cornell, Dec. 28-30.

British Industries Fair, White City, London, Feb. 19-March 2, 1934.

American Management Association, 4th Annual Packaging Exposition, Hotel Astor, N. Y. City, March 13-17, 1934.

Executive decree dated July 21, 1933, canceled all concessions obtained from Government of Chile for exploitation of Chilean guano deposits. This action is considered to be in line with Government's plans to establish a guano monopoly under direct control of the State in order to exploit deposits more scientifically and to supply cheaper fertilizers for domestic consumption. Chilean Ministry of Agriculture will take over a stock of 6,000 tons held in ports of Southern Chile by a concessionaire, also a quantity of 1,000 tons alleged to be ready for shipment by another.

Foreign Trade Better

Larger quantities of a number of chemicals and related products, in comparison with last year, were exported from and imported into U. S. during first half of this year. In certain instances, larger volume represented a smaller value because of reduced prices.

Exports of all coal-tar products, with exception of creosote oil, were larger this year. Exports of benzene were more than double those in 1932 period. Total value of exports of coal-tar products was $5,989,000, compared with $4,200,000 last year. Other increases in exports were chiefly in industrial chemicals and specialties.

Notably large imports included acetic acid, arsenic, iodine, and quinine sulfate and other cinchona alkaloids. Imports of fertilizers totaled 582,200 tons, valued at $11,328,000, compared with 464,900 tons, valued at $9,900,000, exported in the 1932 period.

Total value of exports of chemicals and related products in 6 months was $46,300,000, or 5.5% less than for first half of 1932. Imports had a total value of $36,900,000, a decline of 8%.

Labor Costs

Proportion of wage costs to the value of products manufactured shows wide variations between industries, a study of preliminary figures on the census of manufacturers for 1931, compiled by the U. S. Dept. of Commerce, shows. Ranging from 3.8% for the refining of cane sugar to 47.2% for the manufacture of typewriters and parts, the figures show striking departures from the average of 17.5%, which is the proportion of wages to value of products manufactured by 174,136 establishments in 1931. Wages paid by those establishments amounted to $7,225,587,464 in that year.

Figures on wages paid in various industries, the value of products and the

percentage of the former to the latter are compared as follows:

	Wages*	Value of products*	% Wages to products
Agricultural implements	$19,100	$84,200	22.7
Aluminum manufacturers	14,000	75,600	18.5
Canning and preserving	53,900	512,400	10.5
Cash Registers	14,900	56,400	26.4
Cast iron pipe & fittings	14,400	48,500	29.9
Cement	29,800	148,800	20.
Chemicals	**66,300**	**532,900**	**12.4**
Cigars & cigarettes	60,100	983,800	6.1
Druggist preparations	10,600	110,600	9.6
Electrical machinery	204,400	995,400	20.5
Flour & other grain mill products	27,200	597,900	4.5
Gas, manufactured	51,000	467,700	10.9
Motion pictures	69,800	151,700	46.
Motor vehicle bodies & parts	193,700	945,900	20.6
Mot. veh. (exel. motor-cycles)	157,400	1,569,500	10.
Petroleum refining	106,800	1,511,500	7.
Printing, pub. (book & job)	210,300	785,800	26.7
Printing, pub. (newspap-ers & periodicals	224,700	1,403,500	16.4
Radio app. & phonographs	35,000	192,300	18.2
Rayon & allied products	38,200	132,700	28.8
Mechanical refrigerators	20,100	156,500	12.8
Rubber tires & inner tubes	63,000	406,200	15.5
Smelting & refining cop	10,700	269,300	3.9
Steel works & rolling mill	338,300	1,402,600	24.1
Sugar refining (cane)	15,000	395,300	3.8
Tin cans	27,500	221,000	12.4
Tobacco, chew, smok., snuff	8,600	170,700	5.
Typewriters & parts	10,300	21,800	47.2

*000 omitted in each case.

Foreign

Although relatively losing ground as compared with U. S. and Great Britain, Germany was able to maintain its status of world's leading chemical exporter in first half of 1933.

Total value of Germany's exports during this period in dollars, was $83,850,000, which was a drop of 7% as compared with the first 6 months of 1932. Exports from the U. S. during same time fell 5.5% to $46,300,000, while those of Great Britain dropped only 3% to $39,050,000. While it is too early for exact figures for destinations of Germany's shipments, it is estimated that at least 7% of its exports during 1933 period went to U. S.

Referring to labor conditions in German chemical industry, reports show that the I. G. added 5,000 workers to its pay roll in first 6 months of 1933. Since the low point of the depression in the summer of 1932, approximately 9,000 additional workers have been employed. While part of this large increase has been due to artificial measures for spreading employment, there seems to be no question that a notable part has been due to the marked acceleration in German chemical production.

Nevertheless, according to Berlin reports, general industrial situation is far from satisfactory. Persistent weakness in the German stock exchanges contrasts with daily official reports of business improvement. Since May stocks have been losing ground slowly but steadily. In the chemical group I. G. has dropped from 143 on May 3 to 126 on Aug. 24 and Salzdetfurth Potash has declined from 212 to 158 in the same period.

Reasons assigned for persistent drop are: (1) unfavorable condition of German foreign trade because of depreciated currencies, high tariffs, import quotas, and last but not least anti-German boycott existing in many countries in retaliation for the anti-Jewish campaign; (2), growing burden on business and industry caused by Nazi's economic program generally and their labor creation program particularly, since these entail many additional although supposedly voluntary levies; (3), continued sales by emigres, both Jews and alleged Marxists, who have been forced to leave country or contemplate leaving.

These factors were counteracted at first by a rush of holders of blocked mark accounts to buy German securities in order to have a return on their money. These purchases ceased some time ago, however, and many foreigners are now selling out.

German Dye Exports

Exports of coaltar dyes from Germany in first half of this year totaled 132,252 quintals, compared with 151,227 quintals in first half of 1932. Value dropped from 67,340,000 marks to 65,161,000 marks.

Imports of dyes were 11,880 quintals, valued at 4,416,000 marks, against 19,428 quintals, valued at 9,271,000 marks.

	Exports		Imports	
	Quintals	Marks	Quintals	Marks
Alizarin, red	3,654	692,000	....	....
Alizarin, anthrazene dyes	4,300	6,248,000	44	41,000
Anilin, sulfur and other dyes	102,033	52,239,000	9,657	4,142,000
Indigo	22,265	5,982,000	2,179	233,000

Destinations of exports this year were chiefly as follows (in quintals):—Alizarin dyes, British India, 2,935; Great Britain, 1,491; indigo, China, 13,697; British India, 1,504; other dyes, China, 16,139; Czechoslovakia, 7,011; British India, 6,455; Roumania, 5,716; Belgium, 5,146; Netherlands, 4,818; Great Britain, 4,779; U. S. 4,079.

Germany's vast road construction program, (1,000,000,000 marks), first phases of which are now being undertaken, has led to a keen competitive struggle between producers of asphalt and tar. Decision to exclude asphalt on the grounds of being a foreign material was protested by German asphalt concerns and the entire question is being subjected to further examination. Germany's imports of coal tar have increased more than 10-fold this year, rising to 13,141 metric tons in first 5 months from 1,238 tons in same period last year.

German Dye Trust June report states that higher production of synthetic petrol was obtained at Leuna Works than in first quarter. Hydrogenation of brown coal was discontinued some years ago in favor of the treatment of oils and tars, but last report reveals that process is once again being worked on brown coal, as not only has the process been considerably improved in recent years, but also supplies of oils and tars proved insufficient.

Italy

Italian chemical industries, including heavy chemicals, synthetic organic dyestuffs, mineral pigments and paints, fertilizers and a number of other groups, are reviewed and statistics of the industry for the year 1932 are presented in the June issue of *The Italian Exporter*, official publication of Institute Nazionale per L'Esportazione, Rome. Copies of report available through Royal Italian Embassy, Commercial Counselor, 44 Whitehall st., N. Y. City.

At a Montecatini board meeting July 12, president of the company said that on the whole business for first six months of 1933 made a satisfactory showing as compared to 1932. He stated particularly that Pallanza cellulose acetate rayon plant is operating full time and commented on increased sales of this product on the domestic market. Output and sales of the heavy chemicals of the company also show an encouraging increase.

Foreign Notes

Beresniki Chemical Combine (Soviet) began production of synthetic ammonia July 15. Caustic potash plant at Bobriki is being rushed. "Lakokraska" trust is arranging for a titanium white plant.

British Coal Refining Processes, Ltd., announced in August that it will erect plant at Huddersfield, Yorkshire, England, B. C. R. process is based on the Salerni system of low-temperature carbonization.

Extensions are to be made to the I. C. I. alkali works at Northwich, in order to cope with a demand for increased output.

Norsk Hydro-Elektrisk Kvaelstofaktieselskab, largest industrial establishment in Norway, will curtail nitrogen production during remainder of 1933 because of the excess of stocks on hand. Plant closed completely for 8 to 10 weeks from July 1.

Triplex Safety Glass has acquired goodwill of Protectoglass, Ltd., with factory at Slough and whose contracts apply to several motor-car manufacturers . . . Office International de Chimie, 49 Rue des Mathurins, Paris, France, is an organization formed to study questions of general interest relating to gathering and interpreting chemical statistics. Director is Jean Gerard.

Buying Advice

Brookmire Commodity Bulletin issued Aug. 21 recommends forward buying in chemicals but suggests waiting for reactions in naval stores; suggests refilling depleted stocks of vegetable oils on price weakness. Bulletin further suggests that linseed oil prices are not likely to show substantial weakness. "Cover," says the report "future needs liberally."

Association News

With the A. S. T. M. Book of Standards (issued triennially) and several special books to be issued, in addition to the regular publications printed each year, an unusually heavy publication schedule is in prospect for the association for the remainder of 1933. The 1933 issue of the Book of Standards will, of course, be more voluminous than the one issued in 1930 due to the large number of new standards adopted in the past 3 years. Included in the list of special publications are the Symposium on Motor Lubricants held in New York in March, Symposium on Cast Iron—a feature of the recent annual meeting, and the annual report of Committee C-9 which includes the very extensive discussion on the "Significance of Tests of Concrete and Concrete Aggregates." The Marburg Lecture will also be made available separately in addition to its inclusion in the Proceedings. Other important publications released include:

1933 Book of Standards.—This will include all of the standards of the Society. It will be issued in two parts, Part I covering Metals; Part II, Non-Metallic Materials. This important and widely used publication will aggregate some 2,600 pages, and will be printed about Nov. 15, 1933 Members receive either part and can obtain both by the payment of $2.

1933 Book of Tentative Standards—will contain all of the 209 tentative standards of the Society in their latest form. Although the current Proceedings will give the new tentative standards and revisions approved this year, the convenience of having all of the A.S.T.M. tentative specifications and methods bound in one cover makes this book in wide demand. Each new member receives a copy of this book. (1100 pages; available Oct. 30.)

Preservative Coatings—95 standards and tentative standards, including specifications, test methods and definitions of terms. (235 pages; available Sept. 15.)

New tentative standards which have been recently accepted include:

Specifications for Spirits of Turpentine (D 13-33T) (revision of standard), submitted by Committee D-1.

Specifications for Industrial 90 per cent. Benzene (Benzol) (D 361-33T), submitted by Committee D-1.

Specifications for Industrial Pure Toluene (Toluol) (D 362-33T), submitted by Committee D-1.

Specifications and Methods of Test for Tricresyl Phosphate (D 363-33T), submitted by Committee D-1.

Methods of Test for Soluble Nitrocelullose Base Solutions (D 365-33 T), submitted by Committee D-1.

Committee Personnel

F. M. Farmer, vice-president and chief engineer, Electrical Testing Laboratories, and G. W. Thompson, chief chemist, National Lead, were re-appointed members-at-large of committee E-8 on Nomenclature and Definitions of the A. S. T. M. J. M. Weiss, Weiss & Downs, consultants, was appointed a member of Committee E-6 on Papers and Publications. Other appointments include P. H. Bates, chief, Clay and Silicate Products Division, U. S. Bureau of Standards, as a member of Committee E-9 on Research.

Also G. G. Oberfell, research director, Phillips Petroleum, as the Society's representative on the A. P. I. Committee on Testing Gas and Natural Gasoline, on the recommendation of Committee D-2 on Petroleum Products and Lubricants. Also Gordon Thompson, assistant chief engineer, Electrical Testing Laboratories, to represent the Society on the Sectional Committee on Electrical Measuring Instruments. Also A. E. White, Professor of Metallurgical Engineering and Director of the Dept. of Engineering Research, University of Michigan, on the Joint Research Committee on Effect of Temperature on the Properties of Metals.

Safety Meeting

U. S. Potash, C. A. Pierce Supt., is a new member of the chemical section of the National Safety Council. Hooker Electrochemical's F. W. Dennis, who is serving as news-letter editor, is urging early reservations at the Hotel Stevens for annual convention (week beginning Oct. 2) because of the fact that the American Legion is meeting in Chicago the same week. Speakers for the chemical section include Ira V. Kepner (Penn. Salt safety director) "Is the Chemical Industry Making Progress;" Clayton E. Plummer, (technical director, chemical and metal metallurgical dept., Robert H. Hunt, Chicago) "Inspection and Repair of Stainless Steel Equipment; and E. C. Curtis (assistant general supt. Niagara Operations, Mathieson Alkali) "Safety in High Pressure Chemical Operations."

Personnel

W. G. Mather has resigned from Cleveland-Cliffs Iron (acetate of lime, acetic, activated carbon) presidency and will become chairman, a newly created position. He is succeeded by Edward B. Greene, chairman of the executive committee of Cleveland Trust, who will drop his active duties in the bank but will retain his position as chairman of the executive committee and director.

New Laboratories

Arthur E. Mould Laboratories, Inc. has opened in South Cayuga st., Williamsville, N. Y., to specialize in analysis of petroleum products.

Sampson-White Laboratories have been organized at Jamestown, N. Y., by E. G. Sampson, formerly with du Pont, and Wilfred H. White, until recently connected with Ford and Mathieson Alkali.

National Oil Appoints

E. T. Woods, National Oil Products plant engineer, has been appointed works manager. He will have charge of the production and maintenance and the laboratories, and will retain his position of plant engineer. Prior to joining National Oil Products, he was engineer for Southern Cotton Oil, and also American Linseed.

D. W. Coutlee is Merck's new director of advertising. Mr. Coutlee was formerly connected with Squibb. He takes the place of the late Charles L. Robertson.

Other Changes

Luther B. Arnold, Jr., formerly assistant to G. B. Kistiakowsky at Harvard, is now research chemist, du Pont organic chemicals dept., Wilmington. J. K. Dale, a former Royal Baking Powder research chemist, is now with A. E. Staley Mfg., Decatur. Frank F. Lindstaedt, former Colloidal Products research director and also with Hercules Glue of San Francisco, is a consultant on insecticidal and colloidal chemistry, with laboratory at 2029 46 ave., Oakland, Calif. Dr. Norris Whitney Goldsmith, physical chemist, has joined A. A. Lund & Associates (N. Y. City food research and merchandising councilors) as account executive. George S. Bratton is new Anheuser-Busch director of laboratories. He was formerly in charge of company's yeast production. J. Edward Brewer, and George S. Gardner are now operating former Chemical Service Laboratories (Philadelphia consulting firm) under name of Brewer & Gardner.

Also H. B. Vollrath, for 14 years Baker Perkins sales engineer, is at Fredericksburg, Va., plant of Sylvania Industrial. B. L. Wehmhoff, former Government Printing Office technical director, is now with W. F. Hall Printing, Chicago. Dr. Irving Weber, for 9 years in charge of Fiberloid Corp.'s research & technical service dept., has resigned. R. W. Simmons is now superintendent of the Ford City, Pa., Pittsburgh Plate Glass plant. Dr. R. M. Schneller is McKesson & Robbins' new research and laboratories director.

Bernard Jacobson will remain as E. C. Klipstein and Sons' works manager. Dr. George Barsky, formerly in charge of Cyanamid's research laboratories at Warners, N. J., and an outstanding organic chemist, has resigned. Another recent resignation was that of G. G. Wittwer, in the industrial sales division and more specifically connected with the HCN and "Cyanogas" (calcium cyanide) departments. Joseph Turner & Co. has appointed Parke H. Masters, Quincy, Mass., as resident sales representative in New England territory. His headquarters will be in Providence.

Corn refining industry has raised wages 11%, wiping out only wage cut made since 1929. August operations of the industry, according to the Corn Industries Research Foundation, are showing some recession from July activity, which was 50% greater than in July last year.

A. F. L. has started a campaign to unionize chemical plant workers in the Charleston, W. Va., section. G. M. Freeman is in charge.

New Construction

Heavy engineering construction is showing definite signs of revival after two months of lethargy, *Engineering News-Record* reports. Revival is attributed to beginning of Federal public works program.

Contracts awarded in 37 Eastern States for construction of all descriptions from Aug. 1 through Aug. 15 totaled $56,243,600, according to F. W. Dodge Corp. This figure is larger by 30% than total for first half of July, but about 12% smaller than in corresponding half of August, 1932.

Chemical and allied industries are contributing heavily to the building revival. Most important is the announcement of Southern Alkali (Cyanamid-Pittsburgh Plate Glass) of intention to rush completion of Corpus Christi alkali plant (See p. 249).* In addition following is outstanding construction news:

Standard Chromates' new addition to Painesville, Ohio, plant is near completion.

Keith Dunham, Chicago, manufacturer of industrial gases, has purchased a five-acre tract of land in Jennings road in Cleveland on which it is planned to build immediately a $100,000 plant for manufacture of oxygen.

New plant will be built adjacent to recently completed factory of Gas Products, a subsidiary of Keith Dunham, and will be ready for occupancy late this fall.

Carteret Storage and Terminal, Carteret, N. J., recently organized subsidiary of General American Transportation, will spend $500,000 in additions and improvements to its bulk oil storage and distributing plant at Carteret.

City Council of Brawley, Calif., is contemplating erection of a city-owned, electrically-operated, ice manufacturing plant, to cost about $200,000 with machinery.

Youngstown Sheet & Tube is considering construction of a new plant for making alloy steel, but officials say that it may be possible to use some of the present plants. Company plans to enter alloy steel field as soon as possible. Henry R. Jones, former president of United Alloy Steel and more recently president of Ohio Ferro Alloys has been named manager of new alloy division. No estimate has been made of the amount to be invested in alloy equipment, but it is understood to be substantial.

New Hiram Walker & Co., Ltd., Peoria plant will be started early in September. Plant should be ready for operation about the first of the year. Bids on construction as well as equipment are being received. Plant is designed to handle 25,000 bu. of grain daily, equivalent to 62,500 gals. of 190 proof spirits, or 125,000 gals. of 95 proof alcohol. Initial project, however, calls for a capacity of 20,000 bu. of grain with equipment for turning out 12,500 gals. of 190 proof spirits and 75,000 gals. of 95 proof spirits daily.

Large addition to Tubize's plant at Rome, Ga., being constructed by Fiske-Carter Co. of Greenville, will involve expenditure of around $2,500,000 when completely equipped and will increase size of plant by one-fifth.

United Engineers & Constructors, Inc., through its affiliate Dwight P. Robinson & Co., Los Angeles, has been engaged by American Potash & Chemical to construct a soda products plant at Trona, Calif. Plant, which will have a daily capacity of 100 tons of soda ash and 125 tons of salt cake, will cost $1,250,000.

U. S. Smelting, Refining and Mining is hurrying construction of its lead refinery at Midvale, Utah. D. D. Muir, jr., Newhouse building, Salt Lake City, Utah, is general manager.

*See also page 250 for Dow bromine announcement.

Obituaries

Mrs. Jennie L. Haskell, mother of Glenn Haskell, U. S. I. vice-president, died in Chicago, July 31. Walter Howard Simonson, 43, founder and president of American Lead Burning, died Aug. 8. Mrs. Jennie Marie Plummer Lund, 71, widow of James Lund, for many years a Merrimac Chemical vice-president, died Aug. 22. Israel Rokeach, 92, founder and president, I. Rokeach & Sons, Brooklyn, first manufacturer of kosher soap in the U. S., died Aug. 11.

Personal

Dr. Chaim Weizmann (discoverer of the fermentation process of producing acetone employed in this country by Commercial Solvents) telegraphed on Sept. 2 Morris Rothenberg, American delegate, refusing to be a candidate for president of the Zionist Congress but offering to direct rescue work for German Jews.†

Dr. Stephen S. Wise of New York appealed to the Eighteenth World Zionist Congress on Aug. 28 meeting at Prague to elect only such leaders as do not oppose the idea of a Jewish State in Palestine.

Rabbi Wise sharply attacked Dr. Weizmann, former president of the World Zionist organization, and voiced opposition to the policies of the Zionist Laborite party.

Here and There

Frank Jackel, fertilizer broker, vacationed at Skytop Lodge, Skytop, Pa. Grasselli's R. A. Squires was married Sept. 2. H. C. Bercow, H. H. Rosenthal Co., is back after an illness of several weeks. Fred E. Loud (Murray Oil Products, Phila.) was out to the Coast in August. R. C. Shuey, Bakelite's technical sales staff was also on the Coast. Jarvis McCrea, (Binney & Smith's carbon black) was in Chicago late in August. J. A. McNulty and family returned early in August from a trip to England and the Continent. Harry E. Dunning, American Commercial Alcohol, Chicago division manager, was Class A winner at monthly meeting of the joint golf auxiliary of Chicago Drug & Chemical Association and Chicago Perfumery Soap and Extract Association at Westmoreland Country Club, Aug. 15. E. F. Smith (American Aniline Products) was in charge.

H. V. B. Smith, H. J. Baker & Bro., sailed Aug. 30 for a month's business and pleasure trip to England and the Continent. Dr. Walter S. Landis, Cyanamid, also sailed unexpectedly Sept. 1.

Company News

A 10% increase in salaries of Hercules Powder employes was announced by Hercules officials Aug. 15. Increase was effective Aug. 1 and applies to all of the company's salaried employes at the home office, branch offices, and plants. Company's 5-day week for office workers instituted more than a year ago will remain in effect. Announcements of shorter hours and increased pay rates at Hercules plants were made last week, approximately 400 additional men being given employment under new schedules.

Cleveland-Cliffs Iron, to stimulate new business and to find ways to reemploy its men, engaged expert chemists and technologists to find new uses for its charcoal by-products. It has been successful in perfecting new methods of carbon activation which are now controlled by company's patent rights.

Rossville's corporate title has been changed to Rossville Union Distilleries, Inc., to signalize its entry into manufacture and rectifying of whisky, gin, rum and other distilled liquors, H. I. Peffer, chairman of the board, announced Aug. 28.

Soligen driers will be made in U. S. by Std. of Cal. Advance Solvents and Chemical, N. Y. City selling agents, announced recently lowering of prices by approximately 25%.

Moved

City Chemical Corp. has moved to 132 W. 22 st., N. Y. City . . . Takamine Corp. moved N. Y. City offices to 132 Front st. on Aug. 5.

†Dr. Weizmann, the dark intense leader of Zionisin, was a Ghetto boy in Pinsk, Russia. Studying at the universities of Darmstadt and Berlin, he became professor of biochemistry at the University of Manchester. In the war, Great Britain desperately needed acetone. Dr. Weizmann provided a new, a cheaper method. It helped to win the war "What do you want" Lloyd George is reported to have asked him. "Palestine replied the Jewish scientist."

Miscellaneous

American Car and Foundry has received order for five 40-ton steel bulk commodity cars for handling carbon black from Godfrey L. Cabot . . . Eastman Kodak, as a contribution to safety in hospitals, is now marketing cellulose acetate film at price now charged for ordinary nitrate material . . . Explosion in a machine room of the Celluloid Corp., Newark, N. J., on Aug. 22, resulted in death of 3 and injuries to score of others. Explosion occurred in an exhaust duct which was supposed to carry waste particles of cellulose dust from room . . . Rockland & Rockport Lime, Rockland, Me., is marketing lime in cellophane lined bags which protect against moisture for one year . . . Darco Sales, 45 E 42 st, N. Y. City has acquired, it is said patented process for promoting fermentation which includes adding to the fermentable solution an activated vegetable char, containing a protein in the pores . . . Wage rate increases under blanket code adopted by Standard of N. J. and its domestic subsidiaries were effective as of Aug. 9. The 36-hour week in refining, production and pipe line branches will go into effect as soon as possible; in the meanwhile weekly working time is not exceeding code's elastic 40-hour provision, which is limited to 6 weeks. In the marketing department maximum 40-hour week will rule . . . Colgate-Palmolive-Peet currently is operating at capacity in its principal lines to meet sharply increased demand of its dealers who had let their stocks run down to dangerously low levels.

Shapiro Branches Out

L. B. Shapiro, manager of the former Western Scientific Supply, Denver, reports connections severed with Thompson-Hayward Co. Western Scientific Supply merged with the latter firm several months ago. Mr. Shapiro is now doing business at 2028 Market st., Denver, under the name of the Scientific Supply Co.

Charlotte Chemical & Dyestuffs (Charlotte, N. C.) incorporated by C. J. Stokes, R. H. Peaseley and Miles A. Bigger with $25,000 capitalization.

One F. J. Van Delden and others have leased block of land near New Braunfels, Tex., and are drilling a helium test well.

Washington

Dr. Harcourt A. Morgan,* director of the Tennessee Valley Authority, will have direct supervision over all matters dealing with agriculture and fertilizer. He will have charge of rural life planning and matters relating to localized industry in its relation to agriculture. He will also direct the design, construction, and operation of smelters for phosphorus and for potash; a research program in the nature and behavior of fertilizers; purchase, blending, and sale of fertilizers; a chemical engineering dept., and the program of research and development in the manufacture of fertilizers, cement, and dry ice; and maintenance and operation of Nitrate Plant No. 2 at Muscle Shoals.

Tariff Commission held a hearing Sept. 12, under authority conferred by Sec. 336 of the Tariff Act of 1930 and in accordance with the Walsh resolution (S. Res. 298), on differences in cost of production of phosphates and superphosphates in U. S. and in foreign countries. Inasmuch as the President has no authority to transfer articles that are on the free list to the dutiable list, Commission can make in such cases only a factual report to Congress following its investigation and the hearing.

*Not to be confused with Dr. Arthur E. Morgan, the Authority chairman.

Freight Rates

N. Y. P. S. C., on Aug. 22, approved new freight rates on N. Y. C. for coal-tar dyes, in barrels, steel drums or in boxed cans, carload quantities, of 47c per cwt., from Black Rock, Buffalo and East Buffalo to New York, Brooklyn and vicinity. New rate is an increase of 2c over former schedule, effective Oct. 1, 1933.

Commission has approved of new rates for Lehigh Valley on chlorate of potash, carloads, of 27c per cwt., from Niagara Falls, etc., to Oswego (over D. L. & W.) and to New York (over O. & W.). New rate is a reduction from class rates and is effective Sept. 11, 1933. Same rate for chlorate of potash has been applied to N. Y. C. from same shipping points to Oswego, effective Sept. 10. Commission has approved reduced freight rates of the N. Y., Chicago and St. Louis on titanium, dioxide and oxide, and titanox, dry, in barrels or sacks, carloads, minimum weight 40,000 lbs., from N. Y. state stations west of Buffalo to stations on lines of other carriers in trunk line territory. New commodity rates are same as those at present in effect on sublimed lead, red or white lead, litharge and zinc oxide, etc., being reductions, effective Aug. 20.

Commission has also approved lower freight rates of N. Y. C. (East) on disodium phosphate, and tri-sodium phosphate, carloads, minimum weight 40,000 lbs., from Solvay to Lockport (on Erie), 18c per cwt., being a reduction from class rates, effective Aug. 20. It also approved new rates of N. Y. C. (East) and West Shore on nitrate of soda, in bulk, in barrels or boxes, carloads, minimum weight 40,000 lbs., from Solvay and Syracuse, on N. Y. C. R. and from Syracuse on West Shore to Niagara Falls, 19c per cwt., being a reduction from class rates, effective Aug. 26.

Commission has also approved reduced freight rates of the Lehigh Valley on chlorate of potash, carloads, minimum weight 50,000 lbs. from Echota and Niagara Falls to Oswego, on D., L. & W. and N. Y. O. and W.; 27c per cwt., not subject to emergency charge; being reduction from class rates, effective Sept. 11.

Approval was also given to rates of N. Y. C. (East) on same commodity, same weight classifications, from Echota and Niagara Falls to Oswego; 27c per cwt. not subject to emergency charge, reduction from class rates, effective Sept. 10.

Insecticides

About 30 representatives of agricultural insecticide and fungicide manufacturers met Aug. 22 at Atlantic City, under the chairmanship of Ernest T. Trigg, president of John Lucas, for the formulation of a code under the industrial recovery act. The meeting was called by the insecticide and fungicide committee of the M. C. A., of which committee Mr. Trigg is chairman.

National Association of Exterminators and Fumigators has been chartered. Headquarters are in N. Y. City.

Incorporators are: W. O. Buettner, Brooklyn; I. H. Josephson, Bronx; J. Rauch, Flushing; K. Concannon, Staten Island; Harry Stocker, New York; W. Levy, New York; W. O'Connor, Brooklyn; Milton Haas, Bronx; Jack Cantor, Bronx; A. G. Armitage, Bronx; Harry Pelter, Brooklyn; L. Kanter, New York; D. Wilson, Larchmont; N. Copeland, New York; J. Shrimplin, Brooklyn.

American Insecticide Institute chartered under Maryland laws, is going ahead with preliminaries designed to make it an important factor in the insecticide manufacturing industry.

Cowan & Dengler, N. Y. City advertising firm, announced association with their organization of Evans E. A. Stone, recently president of William Peterman, Inc., and past president of the National Association of Insecticide and Disinfectant Manufacturers.

Nicotine and nicotine sulfate imports into U. S. during first half of 1933 totaled 66,515 lbs., with declared value of $22,692. Germany furnished all the material entered during first 4 months—35,678 lbs., valued at $12,206. May-June receipts of 30,837 lbs. ($10,486) originated in Russia. Complete statistical data on imports prior to Jan. 1, 1933, are not available, on account of the inclusion of nicotine in a classification with other alkaloids. Receipts through port of New York during 1931, all from Russia, were: Nicotine sulfate, 83,224 lbs., valued at $47,501; nicotine, 50%, 4,233 lbs., valued at $2,983; and nicotine, 95-99%, 1,159 lbs., valued at $1,937.

Chemical Fads and Fancies

A. C. S. will tender a dinner to 42 pioneers of American chemical science, all of whom attended the Columbian Exposition in Chicago in 1893. Prominent among those who will dine Sept. 14 are Charles L. Reese, president-elect of the society, Charles H. Herty, Dr. Charles E. Monroe, only living charter member, Dr. Gustave Egloff and Dr. Alvin H. Sabin. First general meeting of the Society was held Aug. 6 and 7, 1890, at the suggestion and under the chairmanship of Dr. Monroe.———Speaking of dinners, the women chemists (God bless them!) will have a "Koffee Klatch" on the same evening at the Women's University Club———Christian B. Zabriskie, whose resignation as Pacific Coast Borax vice-president and general manager was announced in July, is recuperating fast and expects to return from Soboda Hot Springs, San Jacinto, Calif., late in September.———E. M. Allen pinch-hit for President Bell, Chemical Alliance, Sept. 8 at Distributors' Code meeting.———F. W. Pickard, a du Pont V-P and L. A. Yerkes, president of du Pont Rayon and du Pont Cellophane, sailed recently in the Isle de France.———So-called "wet" stocks are now failing to "gyrate" every time the 18th amendment gets a body blow.———Union Carbide is going to supply Lt. Commander T. G. W. Settle with new supplies for a flight into the stratosphere in search of cosmic ray data. First try ended in a Chicago railway station after 10 minutes duration.———Sodium tetrathionate is the latest suggested antidote for hydrocyanic acid and carbon monoxide poisoning.———Roscoe Edlund, executive secretary of the Soap & Glycerine Producers' Association and president of the Association of Trade Association Executives, has been delivering a series of broadcasts over the NBC network on "A Planned Future for 120,000,000 people."———Chemical industry finally broke into this fashionable kidnapping game. C. P. DeLore, well-known St. Louis barytes manufacturer, almost was a gang "victem"—but not quite.———George W. Merck has been appointed New Jersey representative on the board of directors of the National Association of Manufacturers.———John A. Chew went to Shenandoah Valley Academy, Winchester, Va., to have his tonsils removed. Chemists' Club round table wants John's unlamemted organs suitably displayed as a trophy in the Games Room.———Speaking of things more or less medical, N. Y. Board of Health has just published a long list of regulations affecting the sale of valerian or valerinates.———And while on the subject of things deadly, there are a number of cans of hydrocyanic acid floating around Baltimore harbor. Stored at Quarantine Station in Curtis Bay the cans were washed into the harbor in the recent storm.———Givaudan-Delawanna chemists know how to make bad as well as good smells. To prove it they duplicated the odor of the musty smell always found in soft coal mines—on order from The World's Fair.———Learning of speculation in real estate in the vicinity of the Muscle Shoals plants, Dr. Arthur E. Morgan, chairman of the Tennessee Valley Authority, has pointed out that the present demand for nitrates does not warrant operation of the plants. It is a wonder the gentleman stays unmolested preaching such heresy.———Dr. A. E. Dustan, F. I. C., chief chemist of the Anglo-Persian Oil Co. will be an A. C. S. guest of honor at Chicago and will lecture before the American Petroleum Institute.———A new process for hydrogen sulfide production has been worked out bringing sulfur and alkali together under pressure. The late George Lynn and a number of his associates in the Columbia Alkali Laboratories are responsible for the method. Purpose is to provide presence of sulfide ion to prevent corrosion in equipment used in the ammonia-soda alkali process. By-product is either thiosulfate or sulfate of the alkali used.———In England the South Metropolitan Gas has inaugurated a service of ridding one's yard of weeds using sulfuric acid. Various strengths have been worked out for various weeds.———Women, living over 2,000 years ago, ignorant of the poisoness properties of lead carbonate, used it as a cosmetic, chemical analysis of a terra cotta toilet box reveals. At least so Prof. William Foster, Princeton, insists.———An optical method has been invented for photographing heat. Prof. Ernst Schmidt, University of Danzig, is responsible. We had plenty of opportunity for him to work here in the past month.———Ruth W. Heath, extension nutritionist of Purdue declares that it is possible to make candy out of watermelon rind. Good old Depression!———Siegfried Turkel, Vienna police reserch chemist has recently revealed chemical methods of detecting writing ink in places where it does not belong.———"The Republic Has No Need of Chemists."—Marat's condemnation of Lavoisier, Father of Chemistry, is the theme of *Liberty's* latest advertising campaign.———On Sept. 18, 1866 Alfred B. Nobel (founder of the Nobel prizes) announced his discovery of dynamite.———Jacob Frederick Schoellkopf is interested in the new Pierce-Arrow Co.

Glass

Corning Glass is today employing nearly as many people as it employed at the highest peak of 1929. Total number of people on the payrolls of three plants of Corning Glass—main plant, Steuben and Fall Brook—is 2,171. On May 6 number employed in the three same plants was 1,563. This means that within 3½ months employment has increased 38%. Number of people employed at 1929 peak was 2,346, or only 175 more than are now employed today.

Libby-Owens-Ford has sold its interest in plant at Clarksburg, W. Va., to a local group who started production Aug. 21 as the Adamston Flat Glass.

Electroplating

Chromium plating industry has formed the Chromium Platers Guild of America. Among the actions to be taken by the Guild will be steps to eliminate unfair competition, and to assure a high standard of work to the consumer. Guild will endeavor to obtain a license or licenses, individual or collective, to permit its members to operate chromium plating plants under certain inventions covered by certain chromium plating patents, and further to grant sub-licenses under any collective licenses which the Guild may obtain.

Guild management is entrusted to an executive committee: companies who have joined: R. Plumacher and Sons, Tillmann Electroplating Works, Inc., Philip Sievering, Inc., National Chromium Corp., Brust Brothers, Inc. Executive secretary is Walter Plumacher, 344 E. 59 st., N. Y. City. Electroplaters are invited to join.

Ferro Enamel, Cleveland, through cooperation with Copper & Brass Research Association, is extending art of copper enameling, formerly restricted to small articles such as jewelry, to more general industrial applications . . . Parker Rust Proof, Detroit, is delivering over 12,000 bbls. of bonderizing compound daily for use on steel beer barrels . . . Fred J. Liscomb, 63, president, Fred J. Liscomb Electro Chemical Laboratory, Chicago, and formerly a Hanson-Van Winkle-Munning salesman, widely known in the electroplating trade, died July 29. His successor in the Hanson-Van Winkle-Munning Chicago office, Donald Baine, died a day later . . . Columbia's Colin G. Fink has been awarded Edward Goodrich Acheson medal, by the Electrochemical Society.

Deutsche Gesellschaft fur Schadlingsbeckampflung m. b. H., Frankfort, Germany, is marketing "Calcid" a calcium cyanide (90% $CaCN_2$ & 10% lime) for plant fumigation. In strength it is equivalent to 50% HCN. Available in tablet or powder form.

Heavy Chemicals

Rush Completion

After substantial expenditures on properties and construction during last two years, work is being actively pushed to complete alkali plant at Corpus Christi, Texas, joint project of Pittsburgh Plate Glass and Cyanamid. This part of the chemical program, contemplated by the two companies for Corpus Christi, will represent an investment of several million dollars. These capital requirements are being financed by Pittsburgh Plate Glass and Cyanamid out of their cash resources, and transaction does not involve issuance of securities to the public.

Southern Alkali Corporation, which was organized in 1931, is building and will operate. Stock is owned jointly by Pittsburgh Plate Glass and Cyanamid. Hugh A. Galt, President of Columbia Alkali, Barberton, Ohio, and a director of Pittsburgh Plate Glass, is the president of Southern Alkali.

A tract of 300 acres on the harbor of Corpus Christi was acquired over 2 years ago for the location of the plant. Within 6 miles of the plant 6,000 acres of natural gas rights were secured. Sixty miles distant, 240 acres located on the Palangana Salt Dome, were purchased. Water will be pumped into the salt wells and the saturated salt brine solution will flow by gravity, through a 14 inch cast-iron pipe line, constructed on the company's right-of-way, from the wells to the plant. A dredged canal from the harbor in Corpus Christi will enable ocean-going vessels to dock longside the plant. Railroad facilities are provided by the Missouri Pacific, the Southern Pacific and the Tex-Mex.

Important Price Changes

	August 31	July 31
ADVANCED		
Acid chromic	$0.12	$0.11½
formic	.11	.10½
Hydrofluoric 30%	.07	.06
48%	.11½	.10
52%	.12½	.11
60%	.15	.13
Naphthenic, spot	.11½	.11
Blackstrap	.06½	.04½
Copper carbonate, 52-54%	.16¼	.15¾
Magnesite, calcined	53.00	50.00
Sodium bichromate	.05	.04½
Sodium fluoride	.07½	.07
Sodium Stannate	.31	.30½
Sodium tungstate	.65	.57
Tin, tetrachloride	.23	.20½
Zinc sulfate	.03¾	.03
DECLINED		
Sodium metasilicate	2.65	2.85
Tin, crystals	.35½	.36½

Officers of Southern Alkali: President, Hugh A. Galt (director, Pittsburgh Plate Glass); vice-presidents, William B. Bell (president, Cyanamid); Clarence M. Brown (chairman, Pittsburgh Plate Glass); Harry L. Derby (vice-president, Cyanamid); H. S. Wherrett (president, Pittsburgh Plate Glass); secretary, J. H. Heroy (director, Pittsburgh Plate Glass); treasurer F. W. Currier (treasurer, Pittsburgh Plate Glass). Directors, who are executives of Cyanamid or Pittsburgh Plate Glass: William B. Bell, Clarence M. Brown, Kenneth F. Cooper, Harry L. Derby, Hugh A. Galt, J. H. Heroy, Walter S. Landis, Raymond Pitcairn, Frederick Pope, H. S. Wherrett and Eli Winkler.

Buying Slows Up

Tonnage slumped in August when comparison is made with the high levels reached in June and July, but showed a decided improvement against the exceedingly low levels of August a year ago. Contract consumers, however, did, in many instances, take larger quantities than their immediate manufacturing schedules called for anticipating higher 1934 contract prices and with the idea in mind of building up sizable inventories.

A number of reasons contributed to the slower tempo in August besides the very obvious one that the month because of vacations, etc., is usually the poorest of the year from the tonnage standpoint. Most industries are in the midst of drawing up codes. Some were hampered by sudden labor troubles, and finally the approach of the long Labor holiday caused further slackening in demand. What will the NRA do to costs, prices? Will the Administration go to inflation? These questions are arising naturally and are exerting an unstabilizing influence for the moment and causing an appreciable amount of hesitancy.

Price changes are still largely on the upward side, but in August both the number and the individual importance did not measure up to June or July. Outstanding were upward revisions in chromic acid (demand from the automotive industry in the past 3 months has gone a long way towards relieving the intense competitive situation long existing); formic (the ½c increase is the first change in the schedule for several years); finally hydrofluoric (as in the case of formic the advance is the first made in a long period. The sodium salt was also advanced from 7 to 7½c.

Spot sodium bichromate was again stronger and is currently quoted at 5c. Both color makers and tanners are exceptionally busy, although the latter showed some signs of a let-down near the end of the month. Metasilicate, granular, was reduced 20c per cwt. in the 3rd week, bringing the price down to $2.65 per cwt.

Generally speaking, chemical consumption showed definite signs of waning in the textile field, while in the glass industry production schedules were heavy.

With Labor Day traditionally the beginning of a new business year chemical manufacturers are looking forward in anticipation of returning to the June-July level or better. There seems to be "more truth than poetry" in this belief. In the past few years recovery from summer inactivity has usually waited until October before showing real signs of vigorous life and in all probability this year will prove no exception. September tonnages, it is the concensus of opinion, will be better than August, but October is likely to prove to be the best tonnage month for 1933. Chemical producers realize that quite a large part of the feverish buying in June and July was forward buying in anticipation of high prices and was not material required for immediate processing. Upon what happens in the next 60 days to these stock inventories in consumers' hands depends a great deal the future trend of prices for next year.

Methanol and Acetate of Lime Data: June†

Monthly statistics on production, shipments, and stocks of methanol and acetate of lime, based on data reported to the Bureau of the Census by thirty-three establishments, are presented in the table below:—

	1931 June	1932 June	1933 May	1933 June	Total 6 mos. (Jan.-June) 1931	Total 6 mos. (Jan.-June) 1932	Total 6 mos. (Jan.-June) 1933
Methanol							
			Gallons				
Refined—							
Wood distillation—							
Production	94,765	97,154	95,365	98,131	1,196,864	677,850	683,524
Shipments	110,454	119,571	105,578	131,203	1,090,155	551,013	586,019
Stocks, end of mo	432,571	276,287	348,752	315,680	.....	.....	.....
Synthetic—							
Production	654,472	712,537	366,015	559,002	4,388,265	3,603,207	2,205,857
Shipments	429,361	587,442	761,369	830,220	2,575,639	2,629,277	3,972,202
Stocks, end of mo	2,908,666	2,852,537	1,715,547	1,444,329	.....	.....	.....
Crude—							
Production	182,273	135,837	184,921	179,368	2,281,395	1,391,203	1,375,861
Shipments	*	*	203,336	149,585	*	*	1,321,446
Stocks, end of mo	623,513	511,120	253,499	317,110	.....	.....	.....
Acetate of Lime							
			Pounds				
Production	1,948,254	1,546,917	2,518,759	2,056,069	31,389,331	18,963,053	19,295,386
Shipments	3,907,718	1,429,551	3,466,881	3,678,422	27,904,786	21,537,745	17,452,760
Stocks, end of mo.	26,114,529	7,254,156	10,599,973	8,977,620	.....	.....	.....
Wood							
			Cords				
Consumption	19,363	13,019	18,882	18,795	219,619	147,927	136,368
Stocks, end of mo.	338,821	286,657	212,080	219,471	.....	.....	.....
			Cords per day				
Total capacity	2,505	2,609	2,505	2,505	.....	.....	.....
Total operating	1,497	1,521	1,672	1,625	.....	.....	.....
Shut down	1,008	1,088	833	880	.....	.....	.....

*Data not available.
†37 establishments reporting.

Solvay Operations

Solvay's Syracuse plant is said to be at or near a record high. Production capacity was substantially increased in 1930-31, and is now being used almost 100%.

Employment at the plant is known to have increased considerably in recent months. It is estimated that rail and water shipments of ash, caustic, calcium chloride, salt and other products are running at an average rate of 4,000 tons or more a day. Company shipped 32,000 tons by Barge Canal alone during July, tonnage consisting largely of ash for Allied nitrogen plant at Hopewell, Va.

Foreign Chemicals

Mineral acids and caustic soda imports into China during 1932 included sulfuric, 3,316 short tons; hydrochloric, 1,380; nitric, 1,680; and caustic, 10,809 tons. These figures show a marked decline from previous years, in part accounted for by increased domestic production. Pacific Alkali, China's first soda plant, entered production in 1921 in Tangku, near Tientsin. Shortly afterward Kiangsu Chemical Wks. was formed. In 1923, a concern now known as Tien Yuan Electrochemical Wks. was projected, and late in 1930 commenced production of caustic, bleach, and hydrochloric, using equipment obtained in French Indo-China from defunct Far Eastern Chemical Wks. Kai Cheng Acid Manufacturing, Shanghai, entered into production of sulfuric in October, 1932. A more detailed report on the industry is published in the *Chinese Economic Journal* (April, 1933).

Italian requirements of phosphorous (red amorphous and sesquisulfide) are estimated at about 250 metric tons annually. In order to provide for the needs of industry and of national defense, a plant was recently constructed at Spoleto by Societe Anonima Fosforo e Derivati. This company is controlled by the Societe Finanziaria Fiammiferi & Affini of Milan.

Sulfur production in Sicily during 1931-32 totaled 261,641 metric tons, divided as to grades, as follows (in tons): Superior yellow, 39,039; inferior yellow, 112,401; third good, 82,698; third common, 26,082; third common dark, 1,421. Total showed an increase of 12,341 tons from the 1930-31 output. Exports, totalling 186,522 tons, against 198,543 tons in preceding year, consisted of 152,686 tons of crude, and 33,836 tons of refined sulfur.

Mason & Barry, Ltd., London operators of Portuguese pyrites deposits, became interested some years ago in a new process for separation of sulfur from pyrites. It is now reported that process has been perfected and is employed elsewhere on an extensive commercial scale. Company has an interest in the process and is considering advisability of installing equipment for treating a portion of their output.

Fine Chemicals

Sea—A Raw Material

Bromine from seawater commercial production is promised in 6 months by Ethyl-Dow Chemical Co. at a plant at Kure Beach, about 20 miles south of Wilmington, N. C. Plant will have an initial capacity of 500,000 lbs. of bromine a month.

Ethyl-Dow Chemical is a $1,500,000 Delaware corporation formed jointly by Ethyl Gasoline Corp., and Dow Chemical. Dow is a pioneer and leading manufacturer of bromine in U. S.; Ethyl Gasoline is world's largest consumer of bromine, in the form of ethylene dibromide, in the manufacture of tetraethyl lead employed to improve antiknock rating of gasoline. Imports of ethylene dibromide jumped from 244,105 lbs. in the fiscal year ended June 30, 1929, to 1,820,150 lbs. in 1930 and 2,532,000 lbs. in 1931. They fell off in 1932 to 1,142,690 lbs.

Chemists have long been interested in bromine from seawater. Practicability commercially was demonstrated several years ago on the "Ethyl." This method was found to be too costly. With the development of a new process which materially reduced cost of treating brines of low bromine content, Dow Chemical began explorations directed to the finding of a suitable plant location. Samples of seawater, were collected over several years from a number of points along the Atlantic coast. Kure Beach was selected because off-shore water is clean and not diluted with surface fresh water, thus maintaining constant content of bromine. Another advantage is facility for disposing of debrominated seawater in Cape Fear River, thus avoiding dilution of seawater taken for treatment.

Kure Beach is desirable also because it offers power and transportation facilities. Process involves treating of seawater with sufficient chlorine to convert contained bromides into free bromine. Bromine is blown out of the water by a strong current of air and by being brought into contact with a soda solution, is converted into sodium bromide-bromate.

Average bromine content of seawater at Kure Beach, where Dow has been operating a large experimental plant since last year, is about 0.007%, or one pound in 2,000 gals. To produce proposed initial output of 500,000 lbs. of bromine a month, seawater will be treated at the rate of 26,000 gals. a minute in a continuous operation. Water is in process in the plant less than one minute. Plant is being built on a unit plan, each unit having a capacity of 250,000 lbs. of bromine a month. Two units are under construction. Others will be added as required.

Important Price Changes

	August 31	July 31
ADVANCED		
Acid lactic, U. S. P. X	$0.55	$0.48
U. S. P. VIII	.53	.46
Acid tartaric, dom	.24½	.23½
Bismuth, metal	1.20	1.05
citrate U. S. P.	2.55	2.45
Subcarbonate, U. S. P.	1.65	1.45
Subnitrate, U. S. P.	1.40	1.25
Oxychloride, U. S. P.	2.80	2.60
Subbenzonate, U. S. P.	3.70	3.90
Subgallate, U. S. P.	1.65	1.50
Subsalicylate, U. S. P.	2.45	2.15
Trioxide, U. S. P.	3.23	3.05
Caffeine Alkaloid, U. S. P.	2.20	1.90
citrated, U. S. P.	1.85	1.55
Cream of tartar	.17½	.16½
Iodine, crude	2.61	2.56
Iron-ammonia citrate, brown scales	.57	.47
gran.	.47	.42
DECLINED		
Silver nitrate	.26¼	.26½

Officers of Ethyl-Dow Chemical:—President, Williard H. Dow, who is president of Dow Chemical; vice-president, Graham Edgar, vice-president of Ethyl Gasoline Corp.; and secretary-treasurer. Arthur E. Mittnacht, who holds same position in the latter corporation.

Board of directors: Earle W. Webb, president of Ethyl Gasoline Corp.; Thomas Midgley, Jr., inventor of ethyl gasoline; Graham Edgar, of Ethyl Gasoline Corp.; Williard H. Dow, Ivan F. Harlow, and Edwin O. Barstow, all of Dow Chemical. Mr. Dow and Mr. Webb constitute the executive committee.

Price Changes

As in the case of most of the industry's divisions fine chemical producers experienced a somewhat slackened demand in August. In nearly all quarters this was no more than was expected, although June and July definitely reversed the usual downward seasonal trend.

Price changes were not quite so numerous in August. Of special importance was the higher prices quoted for bismuth metal and most of the important salts. The advance was attributed not only to the higher raw material cost but to a much better demand as well.

Tartaric, domestic, registered a 1-cent advance. Imported jumped around rather erratically, due to the currency fluctuation. Crude iodine did likewise and managed to show a net price gain for the 30 day period. Mercury sales were light but supplies were not heavy and the market remained fairly firm but at the end of the month a $1 a flask reduction was placed in effect. Several of the glycerine producers were quoting higher prices for refined but the movement as the month closed was still not general.

Raw material costs did not move as broadly in August as in the preceeding months, with the result that price changes were not so numerous.

Due to changes in the European Syndicate, prices on crude iodine have been reduced by approximately 40%, according to cables received in this country on Sept. 5.

New price is quoted at 14s 6d per kilo, or $1.52 per pound, equal to $4.55 sterling. Although the Chilean producers continue to name 25s per kilo, leading trade factors fear that the drop in European prices will affect this market in view of the large quantities held here.

Deaths

Charles L. Robertson, 59, Merck advertising manager died Aug. 12 in his home in Jamacia, L. I., after an illness of 6 months.

Mr. Robertson was born in Brooklyn. He was a printer in his youth and he also wrote "thrillers" of the type popular in the 90's. He joined publishing department of Merck in May, 1899, and shortly afterward became associated in the editing of *Merck's Report*. About the same time as the company began to extend its advertising, he became manager of this activity. His work, during his long association with the house, was chiefly devoted to familiarizing medical and pharmacal professions with Merck products and services. He developed *Merck's Report* as a quarterly pharmacal journal and inaugurated and directed the "Know-Your-Druggist Better" campaign. Among his last undertakings was the planning of the exhibit of Merck & Co. at the Chicago Century of Progress Exposition, a work which he was unfortunately unable to see completed.

Forrest Samuel Jones, for 17 years Chas. Pfizer plant engineer, died July 31 at his home in Brooklyn after an illness lasting 18 months.

New Products

Ung. Pharma., A. G. I. G.'s Hungarian pharmaceutical and fine chemical distributing unit, is starting plant to produce under I. G. patents and licenses.

Spencer Kellogg is offering drug trade Kellogg's Gold Bond and Kellogg's Diamond Quality castor oil (odorless and tasteless) in 5-gal. special containers. New containers cannot be opened without giving evidence of tampering.

Givaudan-Delawanna is mailing samples of rubber odorized with Para-Dor 5145. Company address—80 5 ave., N. Y. City.

Pennsylvania Coal Products, Petrolia, Pa., has begun commercial production of phloroglucinol and pyrocatechin (catechol). It is offering both products in C. P. and technical grades.

A New Stearic Acid

Will & Baumer Candle, 17 E. 32 st., N. Y. City, is now marketing "Hydistear" a stearic acid made exclusively from animal fats, and for which it is claimed special degree of purity.

Coal Tar Chemicals

Toluol Supplies

The continued toluol shortage featured the coal tar chemicals. Because of the decline in textile operations a slackening in demand for intermediates and dyes showed up in the last 10 days of the month. Benzol and phenol were taken in satisfactory quantities, particularly the former, the demand specially from the tire industry showing very little signs of abating. The decline in steel operations had no appreciable effect on the situation. Stocks are not excessive.

Interest centered on July by-product coke output statistics. Production of by-product coke amounted to 2,797,316 tons, or 90,236 tons per day, the highest daily rate reported since May, 1931. Compared with June, the July rate increased 20.8%. Stocks at by-product plants decreased from 2,946,868 tons to 2,846,408 tons, or 3.4%, during the month, all of the decrease occurring at furnace plants. Coking coal charged in by-product ovens amounted to 4,057,375 tons, an increase of 24.8% over the June output of 3,250,535 tons, and compared with 2,198,100 tons in July, 1932. For the first 7 months amount of coal charged in by-product ovens totaled 19,842,074 tons, as against 18,605,300 tons in 1932.

Output of tar in July totaled 37,327,850 gals., as compared with 30,905,022 gals. in June and 20,222,520 gals. in July last year. To the end of July output was placed at 182,547,080 gals., as against 171,168,760 gals. in corresponding period last year. Production of light oils in July aggregated 12,415,567 gals., as compared with 9,946,637 gals. in June and 6,726,286 gals. in July last year. For first 7 months total was 60,716,746 gals., as against 56,932,218 gals. in the similar period 1932. July output of ammonia sulfate, or its equivalent, reached 47,613 tons, as against 38,145 tons in June and 25,795 tons in July, 1932. For the first 7 months the output was placed at 227,847 tons, contrasted with 218,283 tons in the corresponding period 1932.

By-product coke ovens in 1932 contributed 97% of the total production of coke in U. S. Output of those plants was 21,258,948 tons of by-product coke in 1932, which was a decrease of 11,096,601 tons from 1931 total, being a decrease of 34.3%. As in preceding two years decline in production in 1932 was accounted for by decreased activities in the metallurgical industries. In years of high industrial activity, pig-iron furnaces consumed approximately ¾ of the total output of both by-product and bee-hive coke.

Of the total output of coke in 1932, by-product division produced an aggregate of 21,258,948 tons, which was 97% of year's total coke production. Stocks of by-product coke on hand at producers' plants on Jan. 1, 1932, amounted to 4,379,000 tons and on Dec. 31, 1932, total was only 3,590,000 tons. These stocks represented a supply for 60.8 days at the beginning of the year and 62.3 days' supply at the end of the year, based on prevailing rate of consumption during month preceding each date.

By-products obtained from coke oven operations in 1932 were as follows:—Tar, 303,408,299 gals.; ammonium sulfate or equivalent, 708,207,288 lbs.; gas, 347,847,192 thousand cu. ft.; light oil and derivatives, 58,918,075 gals, naphthalene, crude and refined, 4,618,792 lbs.; creosote oil distillates, 5,733,819 gals.; creosote oil in coal-tar solution, 1,652,005 gals.

Important Price Changes
DECLINED

	August 31	July 31
Naphthalene, crude, imp	$1.75	$1.85

Carrollville Plant

Du Pont will remove Newport Chemical's Carrollville, Wis., plant to Deepwater, N. J. Newport Chemical business, which was purchased about 2 years ago by du Pont, manufactures dyestuffs and employed about 500 men at the Carlville plant, which latter was reported as having a value of about $2,000,000. When the business has been moved to Deepwater about 250 men will be employed. Two years will be required to complete moving.

Publications

British Standards Institution has issued specification for sampling and analyzing coke. (B. S. S. 496-1933) Publications Dept., British Standards Institution, 28, Victoria st., London, S. W. 1-2s. 2d.

"Coke and By-Products in 1931" has just been issued by Bureau of Mines. Copies at 5c each available from the Superintendent of Documents.

Foreign Coal Tar

German 1932 coal tar production amounted to 1,050,000 metric tons according to preliminary figures. This compares with production of about 1,150,000 tons in 1931. Production of crude derivatives included:—Pitch, 600,000 tons; coal tar oils, 300,000 tons; naphthalene, 52,500 tons, and anthracene, 20,000 tons.

British exports of coal tar dyes during first half of 1933 dropped to 44,751 cwt., valued at £454,259, from 58,524 cwt., valued at £536,256, in the first 6 months of 1932. A drop in dye imports was also recorded, 22,586 cwt., valued at £515,818, being imported in the 1933 period, against

24,122 cwt., valued at £554,576, in the corresponding period in 1932.

Japanese 1932 benzol production is estimated 20,000 metric tons, compared to 12,556 tons in 1931 and 16,209 tons in 1930. Yawata Steel Works (largest benzol producer) is expected to increase annual output to 12,000 tons and other steel, coke and gas companies in Manchuria and Chosen as well as Japan proper are also reported contemplating larger output. Scarcity of benzol for dyestuffs was due largely to military demand for benzol.

Creosote oil imports into U. S. showed a considerable decline in the first half of 1933, when, according to preliminary data, incoming shipments aggregated 9,124,934 gals. ($575,504), compared with 18,459,270 gals. ($1,630,897) during the corresponding period of 1932. United Kingdom supplied a third of U. S. imports during the 1933 January-June period, followed in order of importance by the Netherlands, Japan, Belgium, and Canada.

Imports of synthetic dyes into U. S. in July amounted to 513,436 lbs., valued at $567,790. Total compares with imports of 151,089 lbs. valued at $138,136, in July, 1932, and is the largest for any month in past two years.

Imports of synthetic aromatic chemicals in July were well below 1932 levels in quantity and value. Imports of color lakes were small. Imports of other finished coal-tar products and intermediates continued in larger quantity than in 1932.

Imports of Synthetic Dyes

	1933		1932	
	Pounds	*Value*	*Pounds*	*Value*
Jan.	314,878	$314,640	297,266	$259,558
Feb.	365,144	369,829	429,298	367,154
March	267,890	257,626	482,545	410,865
April	232,741	229,078	300,144	259,425
May	360,490	352,111	206,225	203,483
June	382,452	389,174	117,792	109,208
July	513,436	567,790	151,089	138,136
Totals	2,437,031	2,477,248	1,984,359	1,747,829

Countries of Origin

	Percentages July 1933	July 1932
Germany	55.19	62.69
Switzerland	42.88	33.49
England	1.72	3.82
All other	.21	.....

Leading Dyes in July Imports

	Pounds
Vat golden yellow GK double paste (single strength)	32,500
Cellitazol AZ paste	18,300
Neolan blue GG	11,023
Trisulphon brown BP conc	10,031
Chloratin fast brown BRL	9,922

(A total of 568 dyestuffs was imported).

Texas Creosoting bond holders have formed a protective committee. Holders are requested to deposit with Boatmen's National Bank, St. Louis.

Republic Steel Corp. started to heat battery of 75 coke ovens, last idle group, making total of 204 active.

Spanish production of wine lees in 1932 was 26,955 tons, worth 7.98 million pesetas.

Solvents

Monsanto Chemical plans large scale production of ethyl alcohol at Everett, Mass., works of Monsanto's subsidiary, Merrimac Chemical, where contracts for first unit of the new plant to cost $300,000 have been let. Construction will start immediately. First unit is scheduled to be in operation by the end of the year. It will have an annual capacity of 3,000,000 gals., about 3% of the total production in this country.

In announcing addition of alcohol to Monsanto's list of chemicals, Edgar M. Queeny, president, stated:

"Production of alcohol by Monsanto is a continuation of our policy to control as far as practical supply of our basic materials. Monsanto is one of the nation's largest users of alcohol. New plant will supply our needs and permit us to share in demand of the trade. Plant will be located at Everett because it has tidewater facilities and the Merrimac Co. uses more alcohol than our other divisions.

"This latest expansion includes formation of new subsidiary, New England Alcohol Co., in which Monsanto takes a majority stock interest. A minority stock interest has been taken by Central Aguirre Sugar Co. of Boston. Arrangements have been made with this company to supply molasses, basic raw material of alcohol, from its extensive sugar properties in Porto Rico. Porto Rican molasses enters this country duty free. No new financing is involved."

Monsanto In Alcohol

The President's approval of the oil code on Aug. 19 asserted a stabilizing influence on the petroleum field which was reflected quite naturally to the petroleum solvents. The practical effect was a raise of ¼c in nearly all items—the first advance since late in July. In addition East Coast tank car prices were increased ½c and tank wagon schedules 1c in certain of the Eastern cities (Newark and N. Y. City). The important changes are given.

The solvent market generally showed little change from the previous month. Consumption in the lacquer field was good as automobile production held up. However the price situation showed little signs of change. The solvent group is outstanding for the very very few revisions that have been made since the entire price structure started to rise several months ago.

Consumers are wondering what effect the entrance of Merrimac into the alcohol picture will have on the market. While a large part of the potential production of 3,000,000 gals. will be used by Merrimac-Monsanto there will be some surplus to sell.

Important Price Changes

	August 31	July 31
Cleaners' naphthas tank, Mid.	$0.05½	$0.05¾
East Coast	09½	.09
Lacquer diluents, tank, Mid.	.06½	.06¾
Petroleum thinners, tanks, Mid.	.04¼	.04½
East Coast, tanks	.09½	.09
Tankwagon, Newark	.12	.11
Rubber solvents, tanks, Mid.	.05½	.05¾
East Coast, tanks	.09½	.09
Stoddard solvent tanks, Mid.	.05	.05¼
East Coast, tanks	.09½	.09
V. M. P. Naphthas, tanks, Mid.	.05¼	.05½
East Coast, tanks	.09½	.09
Tankwagon, Newark	.11½	.10½
N. Y.	.11½	.10½

Mexican Ministry of Finance has granted concessions for establishment of two credit institutions—Mexican Financing Society and Financing & Storage Co. of Alcohol, which will finance alcohol distilleries and warehouses in States of Nayarit and Sinaloa.

Chemical Specialties

Du Pont is marketing its anti-freeze methanol under "Zerone" trade name. Product is to be backed with newspaper advertising in key cities and over the air, in addition to dealer material.

Union Oil, Los Angeles, is introducing new spot remover (two liquids).

Drackett Chemical (maker of "Drano") is making a new liquid window cleaner.

Latest member of the growing Socony household specialties is Socony Cleaning Fluid.

Tobacco By-Products & Chemical, Louisville, is advertising a new use "Black Leaf 40," to keep cats and dogs away from flowers and shrubs.

Anderson-Pritchard Oil, Oklahoma City, Okla., is now offering special oil for fly spray manufacture in which petroleum odor has been neutralized. "Apco Naphtha B-280."

Dr. E. L. Maines, formerly with Strong, Cobb & Co., Cleveland, has formed E. L. Maines Co., Cleveland (1514 Prospect ave.) to engage in private formula manufacturing.

Albert G. Koester has been appointed director of sales for Speedo Products Co., manufacturer of cleaning and polishing compounds, Buffalo, N. Y. Arthur J. Welsh has been engaged as sales manager by Liquid Veneer Corp., Buffalo, N. Y. He was formerly assistant to the president of Van Ess Laboratories and Anacin Co.

Paints, Lacquers and Varnish

Lacquer Association

Lacquer Manufacturers' Association, in the process of formation for several months, came into being Aug. 17 at a meeting at the Chemists' Club (N. Y.)

After preliminary remarks by Frank G. Breyer, who at the request of several of the lacquer companies, performed the necessary preliminary organization work, the following officers were elected to serve until the next meeting of the association to be held Oct. 1. G. J. Nickolas, G. J. Nickolas & Co., Chicago, is president; A. N. Brown, Agate Lacquer, Long Island City, is vice-president; R. V. Kirk, Roxalin Flexible Lacquer, Long Island City, is treasurer and J. P. Hubbell (associated with Singmaster & Breyer) is secretary.

Question of a code for lacquer was discussed. It was the consensus of opinion of the meeting that the Association should confine its efforts for the time being to endorsing and supporting representative lacquer men in election of lacquer representatives on the Committee of 48, which is to administer paint, varnish and lacquer industry code. It was pointed out that a major function of the Association during coming year will be to give support to the lacquer group on this Committee in their efforts to promote and protect lacquer interests and to improve conditions in the lacquer industry. The Association endorsed O. J. S. de Brun and R. Neuberger as lacquer representatives for the Eastern Section, R. W. Levenhagen and W. C. Dabney as lacquer representatives for the Central States and Andrew Brown as lacquer representative for the Pacific Coast on the Committee of 48, which is to administer the paint code.

Ernest T. Trigg's paint code committee mailed late in August ballots to all known paint, varnish and lacquer companies requesting votes on commodity group representatives in accordance with Article IX of the code which has been filed with NRA in Washington. These were returnable Sept. 2 to the American Paint & Varnish Association, Washington. Election of the 48 board members by communities will follow.

Thirteen Cleveland paint manufacturers who are engaged principally in manufacture of paints and roofing cements, sold directly to consumers, held a meeting, Aug. 4, to discuss paint industry code. These manufacturers feel that they have problems more or less peculiar to themselves, which are different from those of the paint, oil, and lacquer industry as a whole. A committee was appointed to meet with Chairman Trigg of the national paint associations' code committee.

Important Price Changes

	August 31	July 31
ADVANCED		
Barytes, ground, imp...	$22.50	$22.00
Blanc fixe, dry pp.....	70.00	60.00
Ethyleneglycol.....	.26	.25
Glue, bone low grade..	.10	.08½
hide, high grade..	.21	.20
medium....	.17	.15½
Whiting, chalk.....	15.00	13.00
Wood flour, imp.....	22.50	17.50
DECLINED		
Casein, dom.....	.14¾	.15
Argentine.....	.14	.14¾
Vermilion, English.....	1.35	1.38

Deaths

Robert Law, 58, chairman of the Barnsdall Corp., died Aug. 2. Alpin I. Dun, 50, former Oil Trades Association president, died suddenly at his home on Lake Truesdale, N. Y. on July 29. He was one of the founders of Cook & Swan. Harvey B. Howland, 88, former secretary-treasurer of Eberson Paint, St. Louis, died Aug. 3. Irving Noonan, manager of Wailes, Dove & Hermiston, Cleveland, died Aug. 2. Albert E. Schafer, 67, director of sales, pigment division, Sherwin-Williams, died Aug. 6. He had a service record of more than 50 years with the company.

Buying Declines

Raw materials entering into the manufacture of paints, varnish and lacquer registered comparatively few changes in August. Barytes ground, imported was advanced 50c a ton to $22.50 and blanc fixe, dry, precipitated, was quoted currently at $70.00. Whiting, chalk, and imported wood flour were two other important upward revisions. The spectacular advances made in casein in the past 3 or 4 months finally halted in August. Prices were off somewhat from the year's high, but both domestic and Argentine material quotations, as established, were closely adhered to. A few of the varnish gums were advanced (ester and sandarac particularly), due largely to a temporary shortage of these items.

Actual paint production schedules were considerably curtailed in August. Within the industry, however, is a very noticeable feeling of optimism that the fall buying will be much better than last year and lacquer consumption will hold at present levels due to continued demand from the automotive centers.

Personnel Changes

Pittsburgh Plate Glass is enlarging paint research operations under direction of Research Director P. R. Croll, Milwaukee. S. N. Rhue has been named director of technical sales research and will continue his duties in Milwaukee. He will also supervise trade sale development. O. J. Hartwick has been transferred to Milwaukee from Newark as specialist in industrial lacquers. W. A. McKim has been added to Newark staff, as well as H. W. Letts. H. S. Nanejian was appointed to take charge of Newark lacquer research. Dr. W. W. Bauer has been named chief of basic research in all products of the paint and varnish division, while C. P. Holdt recently joined the staff in Milwaukee as a specialist in the field of synthetic coatings.

Also Vernon D. Reynolds has been appointed sales promotion manager of Chicago office of American Asphalt Paint. He was formerly with Larkin, Buffalo. B. W. Burleigh, La Clede Mfg. Co., Buffalo, was made president of new National Color Card Manufacturers' Association at the organization meeting of the industry's representatives Aug. 2. W. J. White, White Co., Detroit, was named vice-president, and F. B. Thomas, of the

June Coating (Lacquers, Varnish, Paint) Sales*

Sales of paint, varnish and lacquer products in June totaled $27,803,750 in value, according to a preliminary report by U. S. Bureau of Census from data supplied by 588 establishments. June, 1933, sales were the best in any month in the last two years. June sales compared with $26,229,638 in May and $19,637,358 in June last year.

	Total sales reported by 586 establishments	*Classified sales reported by 344 establishments* — *Industrial sales* — *Total*	*Paint and varnish*	*Lacquer*	*Trade sales of paint varnish and lacquer*	*Unclassified sales reported by 242 establishments*
1933—*January.....	$11,275,396	$3,529,886	$2,386,947	$1,142,839	$4,168,260	$3,577,250
*February....	11,665,734	3,423,033	2,445,378	977,655	4,771,706	3,470,995
*March.....	13,578,568	3,391,947	2,484,550	907,397	5,788,213	4,398,408
*April.....	19,043,787	4,677,309	3,143,803	1,533,506	8,582,411	5,784,067
*May.....	26,229,638	5,990,295	4,296,812	1,693,483	11,780,920	8,458,423
†June.....	27,803,750	6,826,268	4,831,310	1,994,958	12,443,411	8,534,071
1932—January.....	$15,894,506					
February.....	16,270,822					
March.....	19,089,005	Comparable statistics not available.				
April.....	22,612,193					
May.....	24,981,441					
June.....	19,637,358	$4,685,399	$3,617,719	$1,067,680	$8,734,330	$6,217,629
July.....	14,430,122	3,793,245	2,900,707	892,538	6,058,813	4,578,064
August.....	16,032,441	3,851,028	3,057,096	793,932	6,918,659	5,262,754
September....	16,805,712	3,980,564	3,113,303	867,261	7,216,748	5,608,400
October.....	15,592,377	3,996,500	3,036,323	960,177	6,610,011	4,985,866
*November...	12,492,818	3,599,319	2,639,362	959,957	5,196,766	3,696,733
*December...	9,484,520	3,222,770	2,186,706	1,036,064	3,506,715	2,755,035
Tot., year..	$203,323,315	.....	.....	.....	.....	.....
1931—June.....	28,587,155	Comparable statistics not available.				
Total (year).....	$278,442,170	.....	.....	.....	.....	.....

*Revised. †Preliminary.

Kinsey Johnston Co., Cincinnati, was chosen secretary-treasurer.

William H. Robinson, formerly associated with engineering dept., Spray Engineering, is now with New England sales force of Roxalin Flexible Lacquer, Long Island City, N. Y. . . . Maas & Waldstein, Newark, N. J., has appointed C. L. Berry western sales manager with Chicago headquarters. He has been with the company for a number of years . . . Glenn A. Gordon, for several years connected with Beckwith Chandler's Detroit offices, is now at the Newark factory in charge of experimental and service dept. . . . E. J. Peters is now purchasing agent for Pittsburgh Plate Glass' paint and varnish division, succeeding late Floyd E. Francis . . . Smith Chemical & Color has appointed A. E. Nelson to its sales and promotional dept. Mr. Nelson has been actively engaged in dry color and chemical industry and until recently was associated with Reichard-Coulston.

Paint Show

Advance Solvents & Chemical, Joseph A. McNulty, Texas Mining & Smelting, and National Pigments & Chemical, have taken space for the Paint Industries Show, which will be held in connection with the annual meeting of the Federation of Paint and Varnish Production Clubs, in Chicago, October 26-28 . . . Elliott Paint & Varnish, Chicago, Ill., has granted a 10% increase . . . Part of Touzy Varnish's Chicago plant (warehouse) was destroyed by fire, Aug. 17. Damage, $200,000 . . . Robert E. Reardon, Reardon Paint, Chicago manager, appealed to Governor White of Ohio for a pardon for Paul Maxin, advertising manager for that company, who was arrested, Aug. 5, as an escaped prisoner from the Ohio state reformatory. Pardon was granted to Maxin . . . Col. P. H. Callahan, Louisville Varnish, was reappointed by Gov. Ruby Laffoon as a member of the board of trustees for Kentucky State Industrial College for a 3-year term ending July 1, 1936.

New Companies

C. Dunning French and several associates have formed new paint company—French, Williams, and Grundy, Inc., 4041 Ridge ave., Philadelphia. All types of white paints will be made, but no lacquers.

Ault & Wiborg Varnish Wks., has changed its corporate title to Ault & Wiborg Corp. Name has been adopted as more adequately designating complete service rendered by the company to users of industrial finishers. This service has been strengthened by additions to technical and sales staff.

Zapon Co., an Atlas Powder subsidiary, combined its Western business Sept. 1 with that of Brevolite Lacquer, North Chicago, Ill. Consolidation is known as Zapon-Brevolite Lacquer, and new corporation is now being formed.

Varcum Chemical, Niagara Falls, N. Y., is now producing phenolic resins for the paint, varnish and related industries.

California Lacquer

Southern California Paint, Varnish and Lacquer Manufacturers' Association was formed in August with J. R. Davis (Atwater Paint, Long Beach) as president, O. B. Pennington (India Paint & Lacquer, Long Beach) as vice-president. Mr. Davis is temporary secretary-treasurer.

Henry Prescott, dry color and intermediates dept. Sherwin-Williams (N. Y. City office), is recovering from an operation for appendicitis, at Bridgeport Hospital, Bridgeport, Conn.

United Lacquer Manufacturing has leased larger building in Elizabeth, N. J. Prudential Lacquer & Chemical has moved to 38 9 st., Long Island City.

National Lead raised on Aug. 15 price of Dutch Boy liquid lead and Dutch Boy flat paint to $3.35 and $3.65 per gal. in barrel lots.

Naval Stores

Prices Irregular

Trend in naval stores was mixed during the past month. The cheaper grades managed to make net gains although quite small. The unsatisfactory position of the higher grades remains largely unchanged. Turpentine showed a net loss for the month. The market was without outstanding news throughout the mouth but as September opened the markets in the primary centers suddenly jumped on news that nearly 8,000 barrels of gum rosin and 5,400 barrels of turpentine were lost when the S. S. Coldwater sank at sea.

August is usually the poorest month in the naval stores year and August 1933 proved to be no exception. Yet the situation is not without its good side too. Receipts at 3 Southern ports of both rosin and turpentine from April 1 through July have increased over last year, 17% and 20% respectively, stocks in those ports on July 31 have been reduced 37% for rosin and 14% for turpentine from those of a year ago. On the other hand it is said that there are sizable accumulations in second hands.

July's foreign movement of naval stores showed an appreciable increase over the exports of that month for 1932. Of spirits turpentine there was shipped abroad 31,176 barrels gum and 1,222 of wood, a total of 32,398 barrels. Of rosins the foreign shipments comprised 104,220 barrels gum and 23,690 wood, a total of 127,910 barrels.

The following shows the foreign movement for the first 4 months of the naval stores year:

	Exports April-July	
Year	*Bbls. S. T. (50 gals.)*	*Bbls. Rosin (500 lbs.)*
1933	111,907	437,737
1932	94,211	385,564
1931	78,754	404,365
1930	122,209	474,872
1929	131,945	509,979

Coding Naval Stores

Southern naval stores distributors adopted Aug. 17 code for distributors, exporters, domestic dealers and brokers. Code will be presented to Washington NRA officials shortly.

July production of naval stores by steam distillation and solvent treatment of wood and stocks of these products on hand July 31, according to data collected by the producers' committee, through Arthur Langmeier, of Hercules Powder, secretary:

Production

	Rosin 500-lb. barrels	Turpentine bbls. 50 gallons	Pine oil Gallons
Month of July	42,103	6,747	276,941
Totals from April 1, 1933	135,063	21,461	894,653

Stocks at Plants

Totals, July 31, 1933	61,785	5,673	.....
Mar. 31, 1933	98,615	12,387	.....
Change	—36,830	—6,714	.....

Note—Rosin production and stocks include all grades of wood rosin.

Code has not been made public. It is reported, however, that among other provisions it provides as follows:

Arbitrations hereafter are to be conducted on the Savannah Board of Trade instead of in foreign countries.

Short selling of turpentine and rosin practically to be prohibited.

The receipts, shipments, and stocks at Brunswick, Mobile, and New Orleans are to be made public when the code goes into effect, in addition to the present publication of these figures for Savannah, Jacksonville, and Pensacola.

Receipts, shipments, and stocks are also to be published for the interior concentration points.

Hours of labor of employees of all distributors are to be in accordance with NRA regulations.

Porter A. Mackall, Antwerp Naval Stores, presided. Representatives of following companies attended: Columbia Naval Stores Co., R. E. Thorpe & Co., Farie Naval Stores Co., John D. McGillicuddy Co., Pine Products Export Co., Naval Stores Dealers, Inc. Jacksonville firms represented were: Godwin Naval Stores Co., A. E. Adamson Co., W. S. Lining Co., Florida Naval Stores Co., Irving Post Co., Carl Moller & Son.

Messers Taylor, Lowenstein & Co., of Mobile, were represented by Mr. R. E. Thorpe. Letter was presented from Rausch Co., of New Orleans.

Provision that after the government has sanctioned the distributors' code all arbitrations with regard to naval stores shall be held in Savannah, as the main primary market, and under the rules and regulations of the Savannah Board of Trade, has also attracted considerable interest, reports *Savannah Weekly Naval Stores Review*. At present all sales to the United Kingdom are on contract forms drawn up by the London Oil & Tallow Association, and requiring arbitration in London by the association of all disputes which may arise between the shipper and the consignee. American distributors' code when it comes into effect will wipe this out. Code will have the force of an Act of Congress, and the new contract forms will require all arbitrations to be made in Savannah under the Savannah Board of Trade rules. As far as can be learned, sales outside of the United Kingdom, when any differences arise, are settled by private arbitration between the parties involved. After all, with stringent regulations governing the industry, trade disputes have been reduced to a minimum.

The producers in the meantime are also drawing up a code through a committee headed by H. M. Wilson, Turpentine & Rosin Factors (Jacksonville). Naval stores industry feels that if complete statistics of production, stocks, etc., are to be given out freely that consumers should also be made to report consumption, stocks on hand, etc. Industry feels that only in this way will a true statistical picture be possible.

Statistics of the Jacksonville Market

Grade	Aug. 5	Aug. 12	Aug. 19	Aug. 6	Sept. 2	Same Time as Last Year	Net Gain or Loss Aug. 5 Sept. 2	Net Gain or Loss from a Year Ago
B	3.80	3.82½	3.80	4.00	4.00	2.35	+.20	+1.65
D	3.80	3.82½	3.80	4.00	4.00	2.40	+.20	+1.65
E	3.80	3.82½	3.80	4.00	4.00	2.60	+.20	+1.40
F	3.80	3.82½—3.85	3.80	4.00	4.00	2.60	+.20	+1.40
G	3.80	3.82½—3.85	3.80	4.00	4.00	2.60	+.20	+1.40
H	3.80	3.82½—3.85	3.80	4.00	4.00	2.60	+.20	+1.40
I	3.80	3.82½—3.85	3.80	4.00	4.00	2.80	+.20	+1.40
K	3.80	3.82½—3.85	3.80	4.00	4.00	3.10	+.20	+ .90
M	3.85	3.85	3.80	4.00	4.00	3.70	+.15	+ .30
N	3.85	3.85—3.90	3.86—3.82½	4.00	4.05	4.00	+.20	— .02
W. G	3.95	3.95—4.00	3.95	4.20	4.10	4.60	+.15	— .50
W. W	4.10	4.15—4.25	4.15—4.20	4.30	4.20	5.10	+.20	— .80
X	4.10	4.25	4.20	4.35	4.30	5.10	+.20	— .80
Market	Firm	Firm	Firm	Firm	Firm	Firm		

SPIRITS OF TURPENTINE

Price	43½	43½	42¼	43¼	41¼	39	—2¼	+2¼
Market	Firm	Firm	Firm	Firm	Firm	Firm		

Week Ending	Spirits Receipts	Spirits Sales	Rosin Receipts	Rosin Sales	Same as Last Year Spirits Receipts	Same as Last Year Spirits Shipments	Same as Last Year Rosin Receipts	Same as Last Year Rosin Shipments
August 5	2,611	5,352	10,393	20,156	2,655	4,219	9,684	9,548
August 12	2,521	631	10,045	13,750	2,516	360	8,874	2,899
August 19	2,756	1,518	9,935	6,972	2,466	511	8,588	1,560
August 26	3,043	1,822	11,329	3,436	2,002	.....	7,724	.....
September 2	2,907	5,466	10,745	6,365	2,640	360	8,813	15,349
This Month	14,038	14,789	52,447	50,679	12,279	.....	43,683	.....
Since April 1	62,752	63,967	230,236	250,168	54,176	49,218	193,500	168,640
Foreign	....	53,103	.....	161,368	.....	36,720	.....	108,178
Domestic	....	10,864	.....	88,800	.....	12,498	.....	60,228

Stocks	Spirits	Rosin	Same as Last Year Spirits	Same as Last Year Rosin
April 1	36,712	116,429	41,691	155,883
July 29	36,117	103,527	42,870	175,335
Sept. 1	34,791	98,605	45,422	180,353

Statistics of the Savannah Market

ROSIN

Grade	Aug. 5	Aug. 12	Aug. 19	Aug. 26	Sept. 2	Net Gain or Loss Aug. 5-Sept. 2
B	3.80	3.80	3.75	4.00	3.90	+.10
D	3.80	3.80	3.80	4.00	3.90	+.10
E	3.80	3.80	3.80	4.00	3.90	+.10
F	3.80	3.80	3.80	4.00	3.90	+.10
G	3.80	3.80	3.80	4.00	3.90	+.10
H	3.80	3.80	3.80	4.00	3.90	+.10
I	3.80	3.80	3.80	4.00	3.92½	+.12½
K	3.80	3.80	3.80	4.00	3.95	+.15
M	3.85	3.85	3.80	4.00	3.95	+.10
N	3.85	3.85	3.82½	4.00	4.00	+.15
W. G	3.95	3.95	3.95	4.20	4.10	+.15
W. W	4.10	4.20	4.15	4.30	4.35	+.25
X	4.10	4.20	4.15	4.35	4.35	+.25
Market	Firm	Firm	Firm	Firm	Firm	

SPIRITS OF TURPENTINE

Price	43¾	43¼	43½	42½	42
Market	Firm	Firm	Firm	Firm	Firm

Week Ending	Spirits Receipts	Spirits Sales	Rosin Receipts	Rosin Sales	Same as Last Year Spirits Receipts	Same as Last Year Spirits Shipments	Same as Last Year Rosin Receipts	Same as Last Year Rosin Shipments
August 5	3,638	493	12,514	6,258	3,292	.....	11,419	.....
August 12	2,845	525	11,186	4,289	2,581	.....	10,422	.....
August 19	3,455	818	12,098	3,542	2,727	.....	10,213	.....
August 26	3,918	680	11,719	3,929	2,363	.....	9,677	.....
September 2	3,430	281	4,062	10,040	2,515	.....	9,612	.....
This Month	17,286	2,797	51,579	28,058	13,478	.....	51,343	.....
Same April 1-Aug. 31	73,593	.....	252,262	.....	58,013	.....	214,323	.....

Stocks	Spirits	Rosin	Same as Last Year Spirits	Same as Last Year Rosin
July 29	15,254	121,069	15,903	186,975
August 31	18,315	116,344	16,331	189,400

London Naval Stores Market

Week Ending	Casein Weekly High & Low W. W. Grade	Turpentine Weekly High & Low	American Stocks Spirits 1933	American Stocks Spirits 1932
July 28	16s—16s 6d	48s 6d—49s 6d	9,852	13,484
August 4	16s	48s 3d—49s	11,599	15,150
August 11	16s	49s	13,579	13,843
August 18	16s	48s 6d—49s 9d	15,675	12,505
August 25	15s 9d—16s	48s 6d—48s 9d	17,608	15,861
September 2	15s—9d	48s*—48s 9d	16,636	17,459

*Close Sept. 2.

Washington Conference

On Aug. 28 a committee of naval stores producers of the South conferred with Washington authorities as to what could be done in behalf of the industry through the present governmental agencies for the improvement of conditions with regard to agriculture, the production of turpentine and rosin being accepted as an agricultural pursuit, and one entitled to come under the several Farm Acts.

On the committee were Chairman Harry Wilson, of the Turpentine & Rosin Factors, Inc., of Jacksonville; Herbert L. Kayton, of the Carson Naval Stores Co., Savannah; Millard Reese, of The Downing Co., Brunswick, and Harry A. Lurton, of The Lurton Co., Pensacola.

Committee wished to know whether the industry could enter into a production program for the next season under which operators would be licensed as to how much each operator could produce, with tags supplied him for each barrel of his proposed production, and no naval stores permitted to be marketed unless each package bore this government tag recognizing it as produced in accordance with such an agreement.

It was thought that this might be done under the Agricultural Administration Act, and that by such a limitation of the crop and a proper apportionment of the proposed production among the operators, perhaps based on the 1933 production, the 1934 crop could be brought down sufficiently to insure the marketing of it and of a large part of the carryover from this crop at reasonably profitable prices.

It is understood that the committee were informed that while the Secretary of Agriculture presumably had the authority to enter into such an agreement it was recognized by the government as being a procedure both "delicate and dangerous," and one invoking a great many problems of a most difficult character.

Despite this rather discouraging beginning it is felt that curtailment of production of the 1934 crop will be effected either this way or through codes operating under the NRA.

Mexican Marketing

Durango (Mexico) naval stores operators are interested in proposed organization of a national rosin marketing combine. It is reported that producers controlling over 80% of the Mexican production have tentatively agreed to general terms of the scheme, although details have not been settled.

It is suggested that all producers in Mexico agree to market through a central office in Mexico City. Orders will be distributed to producers in proportion to average production during past several years. A new basis of grading rosin will be established with standard prices, f. o. b. shipping points, for each grade. Nonsalable surpluses, particularly dark rosins, will be exported and losses, if any, will be prorated.

June shipments amounted to approximately 14,300 gals. of turpentine shipped to U. S. and about 190 metric tons of rosin for domestic consumption.

French Production

In a survey of the French naval stores industry (June 30) it was estimated that receipts of gum from this year's crop were 25% greater than those in corresponding period last year. Receipts of gum from first dip were extraordinarily large, while receipts from 2nd dip were normal and those from 3rd somewhat reduced because of unfavorable weather.

Statistics covering stocks of turpentine and rosin are not available. It is estimated, however, that domestic normal consumption is about 5,000,000 gals. First 3 dips of new crop yielded approximately 2,357,000 gals. of turpentine. Reports indicate that turpentine stocks are accumulating and there will be abundant stocks of pale grades of rosin on hand.

Exports in first 5 months of 1933 were 132,870 gals. of turpentine and 11,130 metric tons of rosin. In corresponding months of 1932 exports were 970,390 gals. of turpentine and 36,477 metric tons of rosin.

Deaths

James Little Medlin, 70, well-known Jacksonville naval stores operator (Godwin Naval Stores Co.) and one of the first to start the industry on the Florida west coast, died Aug. 23. John C. Buie, 71, well-known in Savannah and Jacksonville circles, died Aug. 7 while on his way to a Jacksonville hospital for treatment. Carey M. Sweat, a retired naval stores operator, died Aug. 14.

Naval Stores Notes

Senator Lucien Knabb of Charlton County, Ga., an extensive naval stores operator, has further expanded operations by taking over from Polk Turpentine, its leases and turpentine farm, located in Pasco County, Florida . . . A judgment for $5,970, an accounting, and appointment of a receiver are asked in U. S. District Court by D. A. Sapp Co. of Wilmington, Del., of C. R. Brooks, turpentine operator at Baxley, Ga.

Rosin consumers are being asked to fill out a questionnaire dealing with the properties they most desire in this naval stores item. Work is being undertaken by Industrial-Farm Products Division, Bureau of Chemistry and Soils.

Hercules is distributing 4-page circular listing advantages of Hercules steam distilled wood turpentine, a guaranteed product packed in handy 1-quart and 1-gallon and 5-gallon cans, and in 30 and 50-gallon drums.

United Kingdom turpentine imports for first six months totaled 1,452,576 gals., compared with 1,398,496 gals. in 1932. Imports of rosin were 66,941 cwt., against 43,971.

Experiments are now being made in France in which colloidal rosin is added to the insecticidal sprays. If successful it will open up a market for the darker shade rosins.

Taylor, Lowenstein has appointed George H. Senn, (Philadelphia Bourse Bldg.) as Philadelphia distributor.

Gillican Chipley Co.'s capital stock has been removed from trading (unlisted) on the N. Y. Curb.

Gums, Waxes, Shellac

Quiet Trading

The gum market quieted down perceptably in August. Demand from most consumers did not reach the June or July levels. In a few items particularly heavy advances were registered, notably sandarac. Local stocks having become quite scarce dealers were forced to raise prices. What was true of sandarac was also largely the case with ester, light and dark.

On the opposite side, the outstanding decline occurred in camphor. Buyers were largely out of the market having covered future needs quite liberally.

The wax market was also a very routine affair in August. Perhaps the greatest strength appeared in Carnauba. In certain quarters business in this material in August was reported as being equal in volume to that of July. Trading in most other items reflected the usual downward seasonal trend.

The volume of shellac business was somewhat disappointing to sellers. Prices in primary centers fluctuated daily, but generally speaking, within a narrow range. In this country prices remained firm and unchanged despite the poor volume.

Important Price Changes

	August 31	July 31
ADVANCED		
Arabic sorts, powd.	$0.11	$0.09½
Ester ,light	.06	.05¼
dark	.05¾	.04¾
Gambage pipe	.55	.53
Sandarac	.35	.26½
Linegal, sorts	.08	.07½
Tragacanth, No. 1	1.00	.90
No. 2	.90	.80
No. 3	.80	.70
No. 4	.70	.60
No. 5	.60	.50
No. 6	.14	.13
Yacca	.04	.03½
DECLINED		
Benzoin, sumatra	$ .19½	$ .20
Camphor, powd.	.48	.52
slabs	.47	.52
Dammar Batavia A/E	.14	.15
Singapore, No. 1 cases	.15	.17

Shellac Imports

Imports of various grades of lac and shellac into U. S. for the first 6 months of 1932 and 1933 are recorded as follows:

	1932 Pounds	Value
Lac, crude, seed, button, and stick	3,557,998	$444,919
Shellac	7,502,621	1,158,170
Unbleached	.....	.....
Bleached	.....	.....
All other	5,882,763	234,176
	1933 Pounds	Value
Lac, crude, seed, button, and stick	3,589,886	$242,854
Shellac	.....	.....
Unbleached	4,129,728	386,467
Bleached	153,720	24,663
All other	5,806,888	236,353

Note:—In 1933 the classification "shellac" was broken down into "unbleached" and "bleached" shellac.

Exports of crude beeswax from Cuba in recent years have been as follows (exports to U. S. in parentheses):—1928,

Shellac Prices, Weekly High - Low for London, Calcutta, N. Y. City

	London		*Calcutta*		*New York City*				
	Oct.*	Dec.	U. S. Cents†	T. N. C. of N. Y.	Bone Dry				
Week Ending	*High & Low*	*High & Low*	*Oct.*	*Dec.*	*August‡*	*10 bbls*	*5-9 bbls.*	*1-4 bbls*	*T. N.*	*Superfine*
July 28	59s 6d—61s 6d	60s 6d—63s	13	13.2	11½	24c	25c	26c	17—17¾c	18—18¾
August 4	58s—60s 6d	59s—61s 6d	13.1	13.3	11⅞	24	25	26	15—15¾	16—16¾
August 11	60s—61s 6d	61s—62s 6d	13.3	13.5	11¾	24	25	26	15—15¾	16—16¾
August 18	58s—61s 6d	59s—62s 6d	12.5	12.8	11¼	24	25	26	15—15¾	16—16¾
August 25	57s—59s	58s—59s 6d	12.5	12.8	11¼	24	25	26	15—15¾	16—16¾
September 1	56s—59s	57s—60s	12.2	12.4	10¾	24	25	26	15—15¾	16—16¾

*per cent.
†Prices laid down London closing prices for the week.
‡Subject to exchange correction (London). Sterling exchange at $4.88.

508,921 lbs., (425,647 lbs.); 1929, 698,821 lbs., (599,790 lbs.); 1930, 556,743 lbs., (541,855 lbs.); 1931, 1,282,556 lbs., (653,614 lbs.)

Shellac Code

New England shellac cutters have appointed a committee of 5 members to draw up suitable regulations under NRA and to confer with shellac cutters from other sections of the country. Committee was named Aug. 17 at a meeting in the Boston City Club, Boston.

Committee for the New England cutters is composed of:—Chairman, Thomas C. Mee, Thomas C. Mee Co., Woonsocket, R. I.; E. S. Parks, Parks Refining Co., Fall River, Mass.; Frank Appleton, Wadsworth Howland Co., Malden, Mass.; C. J. Landen, Sterling Paint & Varnish Co., Boston; and E. E. Morton, Carpenter Morton Co., Boston.

Important Price Changes

	August 31	July 31
ADVANCED		
Carnauba wax, No. 3 N.C.	$0.14¼	$0.13½
DECLINED		
Bayberry	.14	.16
Beeswax, African	.18½	.19
Candelila	.09	.09½
Japan	.07	.07½
Spermaceti, blocks	.20	.21
cases	.21	.22

L. M. Leffingwell, Archer-Daniels-Midland, treasurer, is on a month's trip to the Pacific.

Soap and Glycerine

Fergusson Laboratories, 24 Oregon ave., Philadelphia, manufacturers of bulk disinfectants, liquid soap, liquid soap base, etc., are now offering these to the jobbing trade all over the country. Company is associated with Alex C. Fergusson Co., representatives in the Philadelphia territory for a number of chemical manufacturers.

P. & G. must abandon use of "Chipso" trademark. J. I. Prescott Co., Passiac, N. J. was the complainant.

For the first time stainless clad steel was used in the construction of an autoclave which was recently installed in a nationally known soap works. Autoclave is 6 feet in diameter by 26 feet in length. Walls are 13/16 inches thick, and heads one inch thick, all of Ing-clad stainless clad steel, having a 20% thickness of 18 and 8 stainless steel on the interior of the vessel. Stainless clad steel was furnished by Ingersoll Steel & Disc Co., division of Borg Warner Corp., Chicago.

Fabrication was handled by the Hamler Boiler & Tank Co., Chicago. Entire autoclave was built up of butt welded

Oils and Fats

Important Price Changes

	August 31	July 31
ADVANCED		
Palm oil, Lagas	$0.04½	$0.04⅛
Rapeseed oil, den. ref.	.65	.62
Cedar wood oil	.31	.29
REDUCED		
Chinawood oil, tanks	$ .0710	$ .08⅜
Cocoanut oil, Manilla tks	.02¾	.03⅝
Corn oil, crude tanks	.04¾	.06¼
Grease, yellow	.02⅞	.03½
white	.03	.03⅝
Linseed oil—See complete prices page		
Neatsfoot oil, No. 1	.07½	.08
Olive oil foots	.06	.06¼
Peanut oil, crude, tanks	.04½	.05¾
Perilla Oil, tanks Coast	.09	.09¾
Soybean oil, dom. crude tanks	.08	.08½
Stearin oleo	.05¼	.06½
Tallow oil, tanks	.07¼	.07¾
Tallow, animal	.04⅜	.04⅝
extra	.03½	.03⅞
special	.03⅜	.03¾

Tung Oil Exports

Hankow tung oil exports totaled 20,986,000 lbs. in June and surpassed high quantity of 17,450,000 lbs. shipped during May.

U. S. share was 17,630,000 lbs., which compares with 14,504,000 lbs. the previous month and 5,730,000 lbs. for June, 1932.

Exports to Europe were also extremely high, amounting to 3,356,000 lbs. as against 2,946,000 lbs. shipped to Europe previous month. Stocks of tung oil on hand at Hankow June 30, were estimated to be about 1,710 short tons.

Statistics showing exports of tung oil to U. S. and Europe for comparative months and first 6 months of 1932 and 1933 are listed below:

	Pounds	
	T'l exports	*Un. States*
June, 1933	20,986,000	17,630,000
May, 1933	17,450,000	14,504,000
June, 1932	6,594,000	5,730,000
Jan.-June, 1933	77,036,000	60,230,000
Jan.-June, 1932	54,646,000	43,930,000

National Cottonseed Products Association has presented to the Secretary of Agriculture a code of fair competition in conformity with the agricultural adjustment act.

Ed Woodall, 61, one of the outstanding national leaders of the cottonseed products industry, died July 31. He was senior partner of Woodall-Martin, Dallas.

Flaxseed Prices In Primary Centers

	Minneapolis			*Duluth*			*Winnipeg*			*Buenos Aires*	
Week Ending	*Cash*	*Sept.*	*Dec.*	*Cash*	*Sept.*	*Dec.*	*Cash*	*Oct.*	*Dec.*	*1933*	*1932*
July 28	2.04½	2.02½	2.02½	2.05	2.05	2.05	1.52½	....	1.54½	1.17⅝	.59¾
August 4	1.90½	1.88½	1.90	1.91	1.91	1.91	1.40¾	1.43½	1.43	1.11¾	.59¾
August 11	1.90½	1.87½	1.90	1.92	1.92½	1.92	1.40½	1.43	1.40	1.07¼	.62⅛
August 18	1.90	1.87	1.89½	1.89	1.89½	1.39⅝	1.42	1.41½	1.03¼	.62¼	
August 25	1.89	1.84	1.87	1.89½	1.87½	1.88	1.42½*	1.43½	1.43	1.07	.61⅞
Sept. 1	1.84	1.78	1.82	1.83	1.79	1.81¼	1.38¼	1.40*	1.40¼	1.09⅞	.63
Aug. 31, 1933	....	1.78	1.81¾	....	1.79	1.81	....	1.40	1.40¼	....	....
Aug. 31, 1932	....	1.05	1.08	....	1.09⅛	1.09	....	.76⅝	.79	....	....

*Aug. 31 close.

Domestic Flaxseed Receipts By Weeks

Week Ending	*August 4*		*August 11*		*August 18*		*August 25*		*September 1*	
	1933	*1932*	*1933*	*1932*	*1933*	*1932*	*1933*	*1932*	*1933*	*1932*
Minneapolis cars	65	39	180	267	179	327	219	603	155	298
Duluth "	12	11	7	34	16	124	54	187	45	192
Winnipeg "	24	12	12	3	7	11	9	24	7	11
Totals to date this crop*	81	62	280	366	482	828	764	1,642	971	2,143

*From Aug. 1.

Linseed Oil Prices, Minneapolis, London, San Francisco and Chicago

	Minneapolis		*London per cent.*							
Week Ending			*Weekly High—Low*		*San Francisco*		*Chicago*		*N. Y. City*	
	Carlots	*Tanks*			*Carlots*	*Tanks*	*Carlots*	*Tanks*	*Carlots*	*Tanks*
July 29	11	10.6	20s 6d	20s 9d	11.5	10.9	11.2	10.6	11.2	10.6
August 4	10.8	10.4	20s 1½d	21	11.2	10.9	11	10.4	11.1	10.5
August 11	10.8	9.9	20s 1½d	20s 9d	11	10.4	10.5	9.9	10.9	10.3
August 18	10.3	9.9	20s 4½d	20s 7½d	10.8	10.2	10.3	9.7	10.9	10.3
August 25	10.3	9.9	20s 1½d	20s 6d	10.8	10.2	10.3	9.7	10.7	10.1
September 2	10.1	9.7	19s 9d	20s 3d	10.6	10	10.3	9.7	10.7	10.1

Minneapolis Linseed Oil and Meal Shipments

	Oil in Pounds		*Meal in Pounds*	
Week Ending	*1933*	*1932*	*1933*	*1932*
July 28	663,501	879,166	1,782,233	2,653,013
August 4	1,131,568	883,211	1,787,305	2,830,215
August 11	931,706	867,002	672,570	2,435,880
August 18	1,315,795	3,034,085	1,462,927	1,065,924
August 25	966,073	959,387	1,637,188	3,257,560
September 2	894,242	1,262,012	1,951,880	2,770,315
Previous Total, July 28	64,440,252	55,337,500	102,208,328	105,021,015
Total to date	69,393,558	60,200,757	108,457,261	118,339,555
From Sept. 1	245,531	174,279	453,375	1,009,375

Buenos Aires Flaxseed Shipments, Stocks

	*Exports in Bushels**					*Since January 1**					*Total*		*Visible Supply*	
Week Ending	*U. S.*	*U. K.*	*Continent*	*Orders*	*Other*	*U. S.*	*U. K.*	*Continent*	*Orders*	*Other*	*1933*	*1932*	*1933*	*1932*
July 28	370	..	146	110	20	5,812	801	13,639	17,739	1,205	646	875	4,724	7,480
August 4	98	..	528	382	..	5,910	801	14,167	18,121	1,205	1,008	1,193	4,528	7,874
August 11	256	..	94	299	..	6,166	801	14,261	18,420	1,205	649	1,260	3,927	7,874
August 18	362	12	189	118	189	6,528	813	14,450	18,538	1,394	870	1,071	3,937	7,480
August 25	445	..	130	142	20	6,973	813	14,580	18,680	1,414	737	1,701	3,543	7,480
September 2	138	..	83	331	24	7,111	813	14,663	19,011	1,438	576	855	2,939	7,087

*bushels. 000 omitted.

stainless clad plates. Coated stainless welding rod of 25% chromium and 12% nickel composition was used for welding stainless interior of the vessel, and mild steel rod used for the soft steel side. Autoclave was built under standard A. S. M. E. class 2 specifications for pressure vessels, and approved after undergoing a test at 250 lbs. pressure, which is 67% above actual working pressures.

United Kingdom exports of both crude and distilled glycerin were lower in first half of this year than in 1932 period; imports of crude increased fourfold.

	1933	
Imports	*Cwt.*	*Value*
Glycerine, crude	25,957	£33,003
distilled	3,904	6,950
Exports		
Glycerine, crude	8,192	£10,366
distilled	60,936	120,837

	1932	
Imports	*Cwt.*	*Value*
Glycerine, crude	6,268	£8,397
distilled	1,717	3,203
Exports		
Glycerine, crude	17,380	£26,369
distilled	73,827	147,999

New Sulfonated Oil

Turkey brown oil is a new type of sulfonated (turkey red) oil which is now being marketed by Glyco Products, Bush Terminal, Brooklyn, for making emulsions, cutting oils, lubricants, soapless-shampoos, etc. It is a brown viscous non-drying oil which dissolves clearly in mineral oils, hydrocarbons and other oils. It disperses uniformly (without separation) in water to give a milky stable emulsion. It is practically odorless, non irritating and does not become rancid. Its price is comparable to that of the products it is replacing.

Textile Chemicals

August Dyes

Geigy's August dye releases included Erio Fast Orange GL, a new homogeneous level dyeing acid dyestuff of outstanding fastness to light and exceptional level dyeing properties, also good fastness to hot ironing. Other fastness properties correspond to requirements which are expected of fast to light level dyeing acid colors. It is recommended for general application on wool yarn and piece goods where first considerations are good levelling and fastness to light, not only as a self shade, but as an exceptionally suitable color for the production of fashion shades of all descriptions in combination with Erio Fast Floxine BL, Novazol Acid Blue SL, Erio Anthracene Blue 2G, Erio Flavine 4G conc etc.—New dye is also suitable for dyeing of unweighted silk owing to its very good level dyeing properties, shades produced being of the highest fastness to light. Cotton and artificial silk effects and acetate silk are left completely white. Silk is dyed lighter than wool. Dischargeability with hydrosulfite is also very good. (Geigy bulletin 861).

Erio Anthracene Rubine B is a notable addition to Geigy's well-known range of Erio Anthracene colors. New product is bluer and brighter than older brand Erio Anthracene Rubine R, it possesses similar fastness properties, and like the latter belongs to the class of level dyeing acid colors, fast to light and perspiration and of good fastness to washing, water and sea water. It is suitable not only for dyeing of pleasing self shades, but also as red component in production of fast to light fashion shades on ladies' dress goods, cheaper qualities of men's wear, all kinds of felt hats, wool felt, carpet, knitting and hosiery yarns, also weaving yarns where a heavy milling is not essential. Cotton and artificial silk effects are entirely unstained in the dyeing process.

Erio Anthracene Rubine B gives very satisfactory results in dyeing of natural silk, both weighted and unweighted, and in the case of wool and silk (gloria) solid shades are produced. New dyestuff withstands chrome, shade being very slightly duller but fastness to light is considerably improved. It is therefore strongly recommended for shading and brightening purposes when dyeing chrome colors. On account of its brilliant shade and fastness to light, this dye should find application in lake and paper trades. (Bulletin 860).

Geigy has also released color card (Circular 253-D) showing shades of Diphenyl Fast Scarlet 4GSW and also 4BSW. Geigy Co.'s address—89 Barclay st., N. Y. City.

Du Pont's latest is Sulfogene Brown CL4R, a sulfur color producing reddish brown shades of excellent fastness. It is equal in strength to Sulfogene Bordeaux CF but very much bluer and noticeably duller. Although apparently similar to sulfur bordeaux on account of its shade, it is distinctly not a dyestuff of this type. It is very fast to acids, ammonia, light, washing and water and is also satisfactory for acetic acid cross-dyeing. It may be dyed on yarn or piece goods, and does not change shade a great deal through after-treatments.

General Dyestuff's August contribution is Rapidazol Blue IB which yields navy shades similar to combination Naphthol AS-Variamine Blue B, but of very good fastness to light, which the older combination did not possess. This color, contrary to former types, can be fixed by a simple ageing and without treatment of organic acids and is therefore of particular value when printed alongside Vat colors. (Circular I. G.-109.)

Rayon Statistics

World rayon production in second quarter of 1933 is estimated by *British Rayon Record* to have reached 64,480 tons, as compared with 64,110 tons in preceding quarter and 52,566 tons in corresponding quarter of 1932.

American output declined in 2nd quarter to 15,370 tons, having reached a total of 16,350 tons in 1st quarter of current year. To counterbalance this

Cottonseed Statistics

Cottonseed products manufactured, shipped out and held in period Aug. 1 to July 31, 1933 and 1932, as reported by Bureau of the Census.

	On hand August 1	*Produced Aug. 1 to July 31*	*Shipped out Aug. 1 to July 31*	*On hand July 31*
Crude oil, pounds—				
1932-1933	*29,523,581	1,445,362,465	1,430,454,933	*52,444,039
1931-1932	8,086,071	1,694,122,987	1,677,821,601	29,523,581
Refined oil, pounds—				
1932-1933	†628,420,148	‡1,272,780,098	.....	†676,163,044
1931-1932	277,836,530	1,515,495,347	.....	628,420,148
Cake and meal, tons—				
1932-1933	114,656	2,093,083	2,047,108	160,631
1931-1932	146,888	2,401,202	2,433,434	114,656
Hulls, tons—				
1932-1933	162,773	1,311,812	1,397,744	76,841
1931-1932	47,723	1,510,874	1,395,824	162,773
Linters, running bales—				
1932-1933	235,521	741,346	904,095	72,772
1931-1932	175,904	875,667	816,050	235,521
Hull fiber, 500-lb. bales—				
1932-1933	4,138	18,691	21,844	985
1931-1932	3,564	33,104	32,530	4,138
Grabbotts, motes, etc., 500-lb. bales—				
1932-1933	15,250	29,760	40,943	4,067
1931-1932	12,475	33,113	30,338	15,250

*Includes 4,182,006 and 5,409,842 pounds held by refining and manufacturing establishments, and 7,235,770 and 14,020,860 pounds in transit to refiners and consumers August 1, 1932, and July 31, 1933, respectively.

†Includes 4,652,177 and 5,594,830 pounds held by refiners, brokers, agents, and warehousemen at places other than refineries and manufacturing establishments and 5,598,691 and 12,775,346 pounds in transit to manufacturers of lard substitute, oleomargarin, soap, etc., August 1, 1932, and July 31, 1933, respectively.

‡Produced from 1,387,499,082 pounds of crude oil.

Exports for Eleven Months Ended July 30

		1933	*1932*
Oil, crude	lbs.	32,756,078	31,578,199
Oil, refined	lbs.	9,123,457	8,608,563
Cake and meal	tons of 2,000 lbs.	149,322	213,833
Linters	running bales	166,275	107,150

decline, however, rayon output in Japan increased from 8,570 tons in 1st quarter to 9,765 tons. Increases were also noted in Belgium, Great Britain, Germany and Switzerland. Split-up of production by processes show that output of every type increased slightly during period.

Rayon Under NRA

"In accord with the wishes of the President, this company has in the past few months increased the number of its employes by approximately 4,500 and has increased its payroll by over $4,000,000 a year," Camille Drefus, president of Celanese Corp. of America.

Practically entire force of 2,300 workers at American Enka, are now operating on a "premium," or piece-work basis. They are encouraged to make over the code minimum since their pay is greater and their machines become more valuable. More than 400 workers were recently added in anticipation of the 40-hour week schedule put into effect Aug. 14. Workers will be on duty 8 hours for 5 days.

Six hundred and seventy-three operatives have been added to the Rome, Ga., unit of Tubize Chatillon, as a result of the adoption of the 40-hour week. Company now has 1,708 as compared with 1,035 during the depression.

Viscose Corp., at Roanoke has placed its employes on a 40-hour-week basis, increased hourly and piece-work rates by 20% and added about 200 employes. This will increase payroll by approximately $20,000 a week.

Alton A. Cook has resigned research staff position with Industrial Rayon to head Arkansas Co.'s research laboratories.

Fertilizers

Phosphate Agreement?

French and American phosphate representatives, after a week of negotiations, in Paris reached on Aug. 30 a tentative accord which has been submitted to American producers. Terms are being kept strictly secret, pending ratification, but it is believed a minimum price has been fixed and a division of the European market agreed upon.

Aside from the fact that large interests are involved, this move is interesting particularly as an example of the benefits that have accrued to certain exporting industries from the depreciation of the dollar. Before and during the war Americans had a virtual monopoly of the phosphate markets of Europe. After the war France began developing her huge Cherifian deposits in Africa, which, due to the proximity of European markets and to cheap labor, enabled her to sell at a much lower price then the U. S. As a result, America was gradually forced completely out of the Continental markets until nothing was left but Scandinavian purchases. France, in fact, even sent cargoes to the U. S. and undersold the American producers in this domestic market.

Then came the depreciation of the dollar. Prices used to be and still are about 150 francs a ton in Casablanca and $6 a ton in Florida. Before the dollar's depreciation $6 used to be 150 francs, and, when the freight to Europe was added, American product was naturally dearer abroad. Now $6 means only 108 francs or less, and American producers can undersell the French in Europe, regaining lost markets.

As soon as the French saw what was happening, they accused the American producers of dumping and sought an agreement to avoid cut-throat competition. That was the situation which brought about the negotiations.

It is not known what *quid pro quo* French are offering, since they could not in any case sell phosphate in the U. S. under existing conditions or prevent American producers underselling them in other European countries.

The Cherifian phosphate office handles the vast Moroccan, Algerian and Tunisan deposits. In 1921 its exports were only 8,000 tons, but by 1930 they had grown to nearly 1,800,000 tons. Even last year 1,000,000 tons were exported despite the depression.

It is hoped a definite settlement will be concluded shortly.

Tunisian phosphate exports during first 5 months of 1933 were 38,000 tons in excess of production, in contrast with surplus production, totaling 138,000 tons, which accrued during first 5 months of 1932. Production of 726,000 tons in early 1933 was 10,000 tons over that of early 1932, while exports of 764,000 tons showed a gain of 31%. Moroccan phosphate deliveries increased during 1st six months of 1933 to 509,384 metric tons from 457,798 tons in corresponding period of 1932. The 1933 exports were destined to Spain, 141,393 tons; Italy, 102,950; France, 75,095; Germany, 47,823; Denmark, 31,433; Netherlands, 28,036; South Africa, 26,052; United Kingdom, 15,696; Portugal, 7,479; Japan, 7,040; Norway, 6,696; Czechoslovakia, 4,521; Hungary, 3,108; Switzerland, 2,722; Guinea and French East Africa, 678 tons. Home consumption was 8,661 tons.

Administering Code

Proposed Code of Fair Competition for the fertilizer industry provides for 12 zones for the administration of the Code. In line with this provision, the Fertilizer Recovery Committee at its meeting in Washington July 29 adopted a resolution providing that one member of that Committee will be designated in each zone who shall as soon as possible and after due notice call a meeting of the producers of mixed fertilizers and/or fertilizer materials doing business in that zone. At these zone meetings the methods and machinery for administering and enforcing the Code will be considered, subject to the supervision and approval of the Fertilizer Recovery Committee. At each meeting the producers present or represented may by majority vote create a committee or committees, appoint or provide for the appointment of such officers and for the employment of such persons as they see fit, and adopt other provisions thought to be necessary for

July Fertilizer Tag Sales

	Equivalent tons*							
	July				January-July			
	P.C. of 1932	1933	1932	1931	P.C. of 1932	1933	1932	1931
South—								
Virginia	218	4,260	1,956	2,905	108	298,565	277,527	390,088
North Carolina	160	1,781	1,116	2,240	131	882,146	674,535	1,013,416
South Carolina	69	1,251	1,820	1,530	123	549,746	445,825	594,405
Georgia	2,226	1,113	50	720	109	389,605	356,733	691,354
†Florida	78	6,666	8,565	14,556	97	360,064	371,011	445,023
Alabama	850	850	100	300	134	274,000	204,900	420,750
Mississippi	440	400	91	500	100	85,856	85,666	197,561
†Tennessee	38	200	522	1,816	114	73,565	64,477	125,822
Arkansas	0	350	0	100	117	21,435	18,348	63,674
†Louisiana	0	950	0	300	104	54,095	52,251	97,018
Texas	800	200	25	0	87	31,822	36,683	69,147
Oklahoma	0	0	0	0	62	1,985	3,225	7,114
Total South	127	18,021	14,245	24,967	117	3,022,884	2,591,181	‡4,115,372
Mid-West—								
Indiana	57	231	406	2,344	80	75,800	94,712	200,186
Illinois	0	0	0	111	63	9,471	15,020	32,609
Kentucky	133	1,060	798	533	87	52,315	59,980	106,262
Missouri	0	0	25	19	53	19,667	37,212	51,398
Kansas	0	250	0	5	58	1,663	2,885	4,896
Total Mid-West	118	1,541	1,229	3,012	76	158,916	209,809	395,351
Grand	126	19,562	15,474	27,979	114	3,181,800	2,800,990	4,510,723

*Monthly records of fertilizer tags are kept by State Control Officials and are slightly larger or smaller than the actual sales of fertilizer. Figures indicate equivalent number of short tons of fertilizer represented by tax tags purchased and required by law to be attached to each bag of fertilizer sold in the various States. †Cottonseed meal sold as fertilizer included. ‡Excludes 51,304 tons of cottonseed meal for fiscal year combined, but no separation is available for amount of meal used as fertilizer from that used as feed.

the proper administration and enforcement of the Code, all subject to the approval and supervision of the Fertilizer Recovery Committee.

At an early date members of the Recovery Committee will be designated to serve as chairmen pro tem., who will call the organization meetings in the several zones.

No Potash Schedule

Potash prices due May 1 are still held in abeyance and sellers continued to quote provisionally. Report that the American and French (African) phosphate rock producers were about to sign an agreement stood out in the month's news and speculation was rife as to the possible effect such an agreement would have on export prices in the near future. Next in importance was the effect of the Government's hog program on tankage supplies. It was felt in most quarters that stocks would increase heavily and the market sagged rather badly.

Important Price Changes

	August 31	July 31
ADVANCED		
Blood, dom., N. Y.	$2.65	$2.60
Hoofmeal	1.40	1.35
DECLINED		
Blood, imp	$2.60	$2.85
Castor Pumice	17.50	18.00
Potash magnesia sulfate, imp	25.00	27.80
Tankage, imp.	3.00	3.25
dom., N. Y.	2.60	2.75
Chicago	1.75	2.75

In the 3rd week of the month a new phosphate rock schedule was adopted as follows (68% minimum): For delivery prior to Oct. 1, 1933, $2.75 per ton; Oct.-Dec. delivery, $2.80 per ton; Jan.-June delivery, $2.85 per ton; July-Sept. delivery, $3.10 per ton; Oct., 1934-Dec. delivery, $3.15 per ton; and Jan., 1935-June, 1935 delivery, $3.20 per ton. Schedule of 70% rock is 50c per ton higher than the 68% grade and the 72% grade is $1 per ton higher. The 75% rock, minimum 74% is based at $4.75 per ton for delivery prior to Oct. 1; $4.85 for Oct.-Dec.; $4.90 for Jan.-June; $5.15 for July-Sept.; $5.25 for Oct.-Dec.; and $5.30 per ton for Jan., 1935-June, 1935; rock of 75% minimum is 10c per ton higher than the 74% minimum. Price for 77% basis, minimum 76% rock is 90c per ton higher than the 74% grade and high-grade hard at 77% is $1 per ton higher than the 74%.

Generally speaking August was the poorest month so far this season in the call for raw materials. Sale of top-dressing materials was only fair.

United States Imports and Exports of Fertilizer and Fertilizer Materials By Classes—Total for All Countris—Long Tons

	July		August-July	
	1933	1932	1932-33	1931-32
IMPORTS				
Ammonium sulfate	10,666	19,797	360,022	261,770
Ammonium-sulfate-nitrate	0	0	0	2,587
Calcium cyanamide	1,462	4,029	64,467	52,150
Calcium nitrate	195	0	15,811	6,407
Guano	5,538	0	57,931	3,646
Dried blood	747	41	3,139	5,628
Sodium nitrate	5,308	100	52,218	209,879
Urea and calurea	181	49	5,474	5,971
Ammonium phosphates	156	*	970	*
Tankage	3,950	1,528	22,956	22,315
Other nitrogenous	10,287	1,118	35,881	34,625
Total-nitrogenous materials	38,490	26,662	618,869	604,978
Bone phosphates	1,867	1,674	28,037	35,047
Superphosphates	1,082	1,839	20,552	12,234
Phosphate rock	0	0	2,100	6,350
All other phosphates	0	1	7,825	15,898
Total phosphate materials	2,949	3,514	58,514	69,529
Muriate of potash	10,543	7,211	84,286	127,431
Kainite, 14%	2,373	3,558	33,312	47,545
Kainite, 20%	0	‡	12,299	*
Manure salts, 30%	14,091	4,878	99,281	128,684
Sulfate of potash	6,343	2,517	36,345	40,299
Sulfate of pot. magnesia	1,953	*	5,668	*
Nitrate of potash	2,740	*	12,341	*
Other potash	10	8	413	756
Total potash materials	38,053	18,172	283,945	344,715
Nit-phos-pot. fertilizers	18	0	6,949	2,907
Other fertilizers	1,697	1,651	70,346	47,527
Grand total	81,207	49,999	1,038,623	1,069,656
EXPORTS				
Ammonium sulfate	2,309	263	4,801	24,359
Other nitrogenous chemicals†	3,825	7,079	137,409	105,706
Nitrogenous organic waste	445	291	8,899	3,897
Total nitrogenous materials	6,579	7,633	151,109	133,962
High grade hard rock	5,029	812	41,288	126,063
Land pebble rock	60,024	46,217	577,883	680,129
Total phosphate rock	65,053	47,029	619,171	806,192
Superphosphates	5,625	4,554	19,770	44,677
Other phosphate materials	111	141	729	1,853
Total phosphate materials	70,789	51,724	639,670	852,722
Potash fertilizers	3,488	107	15,641	9,082
Concentrated Chem. fertilizers	34	589	13,881	20,248
Prepared fertilizer mixtures	250	306	1,461	2,739
Grand total	81,140	60,359	821,762	1,018,753

*Not previously stated separately.
‡Included in Kainite, 14%.
†Chiefly domestic synthetic sodium nitrate.

Imports of fertilizer and fertilizer materials during the month of July totaled 81,207 long tons compared with 49,999 tons for July, 1932 and 97,358 tons for July, 1931. Largest gains in imports were shown for guano, sodium nitrate, tankage, muriate of potash, manure salts and sulfate of potash.

Exports of fertilizer and fertilizer materials during July totaled 81,140 long tons against 60,359 tons for July, 1932 and 89,409 tons for July, 1931. Exports of high grade and land pebble rock showed a fair increase over the exports of July, 1932. There was also a small gain in the exports of superphosphate. Ammonium sulfate and potash fertilizer exports were much larger than those for July, 1932.

Representatives of fertilizer companies conferred with North and South Carolina agronomists, Aug. 20, as to the form that nitrogen must now be guaranteed under new fertilizer laws. Agronomists met Aug. 31 again. Recommendations will be shortly announced.

Deaths

Peter B. Bradley, 83, a pioneer in the fertilizer manufacturing industry and former president and chairman of the executive committee of the A. A. C., died Aug. 26 at a hospital in Hingham, Mass., of injuries received 3 days previously.

A. J. Robertson, 65, superintendent of A. A. C.'s Spring Hill, Tenn. phosphate mine for 18 years, died Aug. 5. Dr. J. S. Hill, 80, outstanding pioneer in development of the Tennessee phosphate fields, died, Aug. 3 at Mt. Pleasant. Mrs. Gertrude L. Goldsmith, wife of N. Y. City fertilizer broker, died Aug. 22.

Industry Notes

H. D. Ruhm, Columbia, Tenn., has acquired mineral rights on 67 acres of blue phosphate land in Hickman County, near the site of proposed power dam, increasing his holdings in that section to over 1,000 acres.

E. R. Hodgson, Empire State Chemical, Athens, Ga., has been elected as additional member of the Board of Directors from that District for term expiring in 1934 . . . Fort Smith Cotton Oil, Fort Smith, Ark., has joined the N. F. A . . . Loncala Phosphate Co., Ocala, Fla., is another new member.

Nash Fertilizer, Charleston, S. C., capital stock $1,000, has been chartered.

Textile Notes

Harold S. Edwards has resigned as president, National Association of Wool Manufacturers . . . Woolen Overseers' Association of Eastern Maine met Aug. 19 at the Elms, Newport, Me. . . . Annual family party of the National Association of Textile Dyers & Finishers at Jean Smith's place at Providence on Aug. 6 was well attended.

Metals and Alloys

New Encyclopedia

Distributors and users of metals and alloys will be interested in new encyclopedia of specifications for metals and metal products issued by the Bureau of Standards. Book (p. 1,350) contains standards and specifications in this field prepared by more than 80 nationally recognized organizations authorized to speak for industry or the Federal Government as a whole. There are 10 chapters covering iron and steel; iron and steel manufactures; ferro-alloying ores, metals, and metal manufactures; aluminum, antimony, bismuth, cadmium, and cobalt; copper, brass, and bronze; lead, mercury, and nickel; precious metals, metal jewelry, and plated ware; clocks, watches, and dials; tin and zinc; and miscellaneous ores, metals, alloys, and metal manufactures. Over 1,600 standards and specifications are given, either in full or by suitable abstract, tabulation, or cross reference; there are also descriptions of methods of testing, chemical analyses, metallic coatings, and heat treatment. This is the 3rd encyclopedia prepared by the Bureau; other two cover specifications in the wood-using industries, and specifications for non-metallic minerals and their products. Copies of the new encyclopedia, bound in green buckram, entitled "Standards and Specifications for Metals and Metal Products," Bureau of Standards Miscellaneous Publication No. 120, may be purchased from Superintendent of Documents, Washington, $4.00.

American Zinc, Lead & Smelting Co. has been sued in Circuit Court at Miami, Okla., for $141,120 for sulfur claimed to have been mined and sold from land of Mrs. Katherine Douthatt of Joplin, owner of extensive mining lands in the Tri-State field. This is the first of numerous suits about to be filed, according to attorneys, against Tri-State mining and smelting concerns for an accounting of sulfur taken from lands where extensive lead and zinc operations are carried on. Sulfur is a by-product and heretofore has not been taken into accounting with many operators.

Present world magnesium production is 2,500 tons (*Die Chemische Industrie*), about 75% coming from Germany. France at present contributes about 5% to the total, but two companies (Pechiney and Ugine) will shortly commence production by the electrolysis of magnesium chloride. Pechiney plant is to have a yearly capacity of 1,000 tons.

July Silver Production

World production of silver in July approximated 12,609,000 fine ounces, against 11,831,000 in June, according to American Bureau of Metal Statistics. For the first 7 months of this year production amounted to 91,961,000 fine ounces. Largest increase in production was accounted for by Canada which, in July, turned out approximately 1,227,000 fine ounces against 644,000 in June. American output gained slightly, approximating 1,552,000 fine ounces against 1,465,000 in June. Mexican production is estimated at 5,100,000 ounces against an output of 5,067,000 in the previous month. Europe and Burma reported small decreases in production in July. Stocks of silver held by American refiners July 31 approximated 8,215,000 fine ounces, a gain from the 6,585,000 ounces a month previously.

The 25th autumn meeting of British Institute of Metals will be held in Birmingham Sept. 18-21.

U. S. Bureau of Mines in August released "Platinum and Allied Metals in 1932"—Advance Final Summary; "Mine Production of Gold, Silver, Copper, Lead and Zinc in the Eastern and Central States, 1932;" "Feldspar in 1932." All are included in Minerals Year-book 1932-33 now available, Superintendent of Documents, Washington, $1.25.

Special advantages are being claimed for the process of fabricating articles in nickel and nickel alloys by sintering finely divided nickel powder to compact form. Powder is produced from nickel carbonyl. Its high degree of purity and freedom from contamination ensured by the use of lower temperatures and the elimination of the melting operation, gives good workability and mechanical and physical properties of very high order to the final sintered product.

Operation of large copper producers' facilities at 20% of rated capacity is understood to be the basis on which conversations concerning an NRA code for the production end of the industry have been conducted.

American Zinc Institute president, Ralph M. Roosevelt, reports zinc code accepted unofficially in Washington. No public hearing, however, has as yet been held.

Cuba and Chemicals

J. M. Jardy, Cuban representative of a member of large U. S. Industrial chemical producers, returned to that country Sept. 6 after spending several weeks in the States.

Sees a much larger Cuban Chemical Consumption

"Despite present unsettled conditions," Senor Jardy reported, "Cuba is a potential market for much larger consumption of chemicals of all kinds. With the passing temporary crisis business will show sharp improvement."

Chemical Construction (Cyanamid Subsidiary) transferred its engineering dept. from Charlotte, N. C. to the N. Y. City offices, 535 5 ave., N. Y. City, Sept. 1.

Acheson Oildag has adopted 5 day NRA work program.

Reynolds Metals has consolidated eastern division sales office, general offices, and executive offices at 19 Rector st., N. Y.

Weekly Metal Statistics: Prices Basic Metals

Week Ending	Lead-Weekly High & Low E. St. Louis	N. Y.	Zinc Weekly High & Low E. St. Louis	N. Y.	Copper Weekly High & Low Conn. Valley Base	Tin Weekly High & Low Straits	Standard	Silver Bulletin Weekly High & Low N. Y.	London, (pence)
July 28	.0435	.0450	.0490—.0500	.0525—.0535	.09	45. —46.50	44.85—45.55	.35 1/2—.37 1/2	.17 5/8—.18 5/8
August 4	.0435	.0450	.0500	.0535	.09	44.37—45	43.40—44.55	.35 1/2—.36	.17 3/4—.17 5/8
August 11	.0435	.0450	.0500	.0537	.09	44.62—45	43.70—49.39	.35 7/8—.36 3/8	.17 7/8—.17 5/8
August 18	.0435	.0450	.0490	.0525—.0537	.09	43.62—45.50	42.75—44.75	.35 —.36 3/8	.17 1/8—.17 7/8
August 25	.0435	.0450	.0480	.0515—.0527	.09	44 —45 7/8	43.30—43.85	.35 7/8—.36 7/8	.17 5/8—.17 7/8
September 2	.0435	.0450	0.465—.0480	.0500—.0512	.09	44.50—46.12	43.60—45.50	.36 1/2—.37	.17 5/8—.18 1/8
Close July 31	.0435	.0450	.05	.0535	.09	44.50	43.75	36.05	
Close August 31	.0435	.0450	.0475	.0510	.09	45.87	44.75	39.10n	
Net gain or loss			— .025	— .002		+1.37	+1.00	+3.05	
Range of Prices, 1933 High & Low		.0450—.03	.05—.0260	.0535—.0295	.09—.05	.48—21.75	.47—21.10		

nNominal

The Financial Markets

August Recovery

August stock market recovery not only erased the July losses but added something to spare. The irregular advance which started in the closing week of July continued throughout the past month although the volume of trading was very much smaller. Prices did not, however,

Daily Record of Stock Market Trend

N. Y. Herald Tribune

reach the high marks made in mid-July, but they are approximately within a 3rd of that level. The net gain for 240 securities in the *N. Y. Times* group amounted to 12% as against a loss of 9% in the previous month.

An appreciation of $2,275,261,709 in values was made in August, compared with a depreciation of $1,946,872,154 in July, and a gain of $4,041,656,665, equal to 36%, in August 1932.

Groups of stocks did not move uniformly in August as in previous months, but independently of one another. Activity rotated from one group to another, with the greater number of groups moving higher, while others, such as the utilities and chain stores, went lower. Motors, rails, oils and chemicals made the best showing.

The average gain last month for the 240 stocks used in the compilation was 2.865 points, against a loss of 2.576 points in July and a rise of 5.653 points in August, 1932. Issues that moved wide of the given average were the 9 issues in the chemical group, where the average gain was 9.819 points, and the 29 public utilities, where the issues showed an average loss of .690 point.

Prior to the upturn, which started in March, a loss of $40,649,292,577, or 79%, was sustained in the stocks comprised in this compilation from the end of September, 1929. Recovery to the end of August has added $10,687,666,248 to their market values, but they are still 58% below the 1929 figure.

The following table shows the changes in August.

Group and Number of Issues	August, 1933 Avr. Net Ch'ge in Points	August, 1933 Change in Values
Amusements (5)	+ 2.000	+ $16,994,683
Building equip. (9)	+ 4.319	+ 60,367,307
Business equip. (4)	+ 3.750	+ 22,864,264
Chain stores (14)	+ .428	— 39,824,695
Chemicals (9)	**+ 9.819**	**+ 331,595,207**
Coppers (15)	+ 2.733	+ 77,512,473
Depart. stores (10)	+ 1.937	+ 21,649,263
Foods (19)	+ 3.112	+ 130,899,643
Leathers (4)	+ .219	— 314,354
Mail order (3)	+ 6.041	+ 76,898,508
Motors (15)	+ 2.967	+ 323,391,710
Motor equip. (7)	+ 1.964	+ 10,245,212
Oils (22)	+ 2.653	+ 524,528,435
Public utilities (29)	— .690	+ 78,827,558
Railroads (25)	+ 5.230	+ 369,986,019
Railroad equip. (8)	+ 6.531	+ 78,855,031
Rubber (6)	+ 1.083	+ 7,701,929
Steels (13)	+ 1.760	+ 63,950,216
Sugars (9)	+ 3.319	+ 26,379,102
Robaccos (14)	+ 3.705	+ 92,754,198
Average and total 240 issues	+ 2.865	+$2,275,261,709

As can readily be seen from the above table the chemical stocks showed the way in the August recovery. Specially heavy were the gains made in the following stocks—Allied, 24 points; Air Reduction, 16¼ points and du Pont 13¼ points. The alcohol stocks and those related to this group also helped materially in boosting the general average of the chemical stocks. The net gains in value made in August are shown:

Company	Net Gain	Value Gain
Allied Chem. & Dye	+24	$57,630,912
Commercial Solvents	+ 7⅞	20,775,722
Du Pont de Nemours	+13¼	146,620,326
Mathieson Alkali Wks	+ 7¾	5,040,879
Texas Gulf Sulphur	+ 6⅛	15,557,500
Union Carbide & Carb	+ 8½	78,428,964
U. S. Industrial Alcohol	+17¾	6,803,060
Virginia-Carolina Chem.	+ ¼	120,303
Westvaco Chlorine Prod.	+ 2⅞	617,541
Total		+$331,595,207

The net changes from January through July have been as follows in the chemical group:

	Increases	Declines
January	$39,652,757	
February		$168,411,582
March	24,037,138	
April	403,188,208	
May	385,593,391	
June	139,232,100	
July		149,136,077
August	331,595,207	
Total	$1,753,887,219	$317,547,659

The net gain in value for the 9 stocks comprising the *N. Y. Times* chemical group for the first 8 months of 1933 amounted to $834,339,560. The net loss for 1932 amounted to $368,177,263. Values are, therefore, back to the levels prevailing early in 1931.

A number of reasons can be assigned for the particular strength in the chemical group of stocks despite a rather loggy market with the public showing very little interest. Half yearly statements continued to indicate that earnings were definitely on the upturn. Also within the past month an unusual number of new projects have been announced by chemical companies and which are given elsewhere in this issue in detail. Consumption of chemicals, while showing a decline in August over July, nevertheless has been maintained at a fairly satisfactory rate at a time of the year which is almost always characterized as "usual summer dullness." Finally the fall outlook is thought in most quarters to be good.

N. J. Zinc Income

N. J. Zinc, which has been paying dividends partly out of surplus in past year or so, in June quarter practically eliminated this drain on accumulated resources. Net income fell only 2c a share short of the 50c quarterly payment, while in June quarter of 1932 deficiency was 23c a share. N. J. Zinc's policy of not publishing a balance sheet makes it impossible to determine current position accurately, but it is understood that liquid resources continue large and current ratio good.

Reorganization Completed

Holders of certificates of deposit for the 6½% debentures of Gillican Co., a subsidiary of the Gillican-Chipley Co., have been notified that plan of reorganization has been completed and that debentures of a new company were ready for delivery by the protective committee. Under the reorganization plan, a new concern, the Naval Stores Holding Co., Inc., was formed under the laws of Louisiana and has acquired the stock of the Downing Co., Inc., which stock the new company pledged it under an inden-

Price Trend of Chemical Company Stocks

	July 28	Aug. 4	Aug. 11	Aug. 18	Aug. 25	Sept. 1	Net Change	1933 High	1933 Low
Allied	117	112½	125¼	130	142½	140	+23	143⅜†	70¾
Air Red	89½	95	98	98	103	104⅜	+15⅛	107¼†	47½
Anaconda	16¾	16¼	17⅜	17	18¾	18	+ 1¼	22⅞	5
Col. Carb.	52	50	57	61*	65	64¼	+ 2¼	71½	23⅛
Com. Sol.	32½	31⅞	36⅝	37¼	40⅞	38⅞	+ 6⅜	57¼	9
DuPont	70½	69¼	75¾	74¾	83⅞	81⅞	+11⅜	85¾	32½
Math.	32½	31½	34½	34	36¾	37½	+ 5	39¼†	14
Monsanto	56⅜	67¾	68½	70¼	73	71¼	+14⅞	74½	25
Std. N. J.	35⅜	35	36⅛	37½	39¾	41⅜	+ 6	41⅜§	22¾
Texas Sulfur	26⅞	26¾	28⅝	30⅛	34⅝	32⅞†	+ 6	34⅞	15¼
U. S. I.	56½	62	69⅞	71⅛	76¼	73⅜	+16⅞	94	13½

*ex-rights.
†new high in August.
‡new low in August.
§Sept. 1.

ture with the Whitney National Bank, New Orleans, as trustee, securing an issue of new 6½% income debentures.

These new debentures will be exchanged for certificates of deposit. For each $1,000 Gillican Co. debenture deposited with July 1, 1931, and subsequent coupons attached, the certificate holder will receive in exchange $1,124.45 of 6½% income debentures of the Naval Stores Holding Co. with May 1, 1933, and subsequent coupons attached. Non-interest bearing script issued for amounts due holders of deposit certificates in excess of multiples of $100 was exchangeable in multiples of $100 for new debentures with all coupons attached. Script certificates must be exchanged for debentures before Jan.24, 1934. It was stated that all but about $4,000 of the $1,204,000 debentures outstanding had been deposited under the plan.

Shenandoah Chemical Holdings

Common shareholdings of chemical and allied industries companies by Shenandoah Corp. (investment trust) were reported recently as follows:

Atlantic Refining	2,000
Commercial Solvents	2,000
Drug, Inc.	2,000
Phillips Pet.	5,000
Socony-Vacuum	2,000
International Nickel	2,500
Texas Corp.	2,000
Union Carbide	3,000
Union Oil of Cal.	1,000

In addition, Shenandoah held 84.52% of Blue Ridge common stock.

Chemical common shareholdings of Blue Ridge June 30 were as follows:

Air Reduction	6,000
Am. Home Prod.	6,100
Am. Smelt.	6,000
Atlantic Ref.	6,000
Columbian Carbon	2,000
Comm. Solvents	8,000
Corn Products	1,500
Dow Chemical	2,000
Drug	8,000
du Pont	6,500
Eastman Kodak	3,000
International Nickel	15,000
Liquid Carbonic	2,000
Mathieson Alkali	7,900
Nat. Distillers	2,000
Petrol. Corp.	2,000
Phillips Petrol.	5,000
Royal Dutch	1,000
St. Joseph Lead	9,000
Seaboard Oil	2,000
Socony-Vacuum	6,000
Standard Oil, Cal.	10,000
Standard Oil, N. J.	12,000
Union Carbide	7,000
Union Oil of Cal.	4,000
United Carbon	6,000

Dividend Increases

Companies increasing dividends or resuming payment last month included Carman & Co. which declared a 50c quarterly dividend on the $2 cum. conv. class A stock payable Aug. 28 to holders of record Aug. 18. Last payment at this rate was made March 1, 1932. Spencer Kellogg declared a 25c quarterly dividend on common payable Sept. 30 to holders of record Sept. 15. From March 31, 1932 to and including June 30, 1933 payments of 15c were made.

Dividends and Dates

Name	Div.	Stock Record	Payable
Abbott Labs	$ .50	Sept. 14	Oct. 1
Amer. Home Prods	.25	Aug. 14	Sept. 1
Amer. Home Prods	.25	Sept. 15	Oct 2
Archer-Daniels-Mid.	.25	Aug. 21	Sept. 1
Carman & Co., cum Cl A	.50	Aug. 18	Aug. 28
Clorox Chemical	.50	Sept. 20	Oct. 1
Clorox Chemical	.50	Dec. 20	Jan. '34
Colgate-Palmolive-Peet pf	$1.50	Sept. 11	Oct. 1
Colgate-Palmolive-Peet pf	$1.50	Dec. 11	Jan. '34
Columbian Carbon	.50	Aug. 18	Sept. 1
Compressed Ind. Gas	.35	Aug. 31	Sept. 15
Courtaulds com int	1½%	July 18	Aug. 19
Dow Chemical	.50	Aug. 1	Aug. 15
Dow Chemical pf	$1.75	Aug. 1	Aug. 15
du Pont	.50	Aug. 30	Sept. 15
du Pont deb	$1.50	Oct. 10	Oct. 25
Eastman Kodak	.75	Sept. 5	Oct. 2
Eastman Kodak pf	$1.50	Sept. 5	Oct. 2
Freeport Texas	.50	Aug. 15	Sept. 1
Freeport Texas 6%	$1.50	Oct. 13	Nov. 1
Hercules Powder pf	$1.75	Aug. 4	Aug. 15
Heyden Chem pf	$1.75	Sept. 21	Oct. 1
Heyden Chemical	.25	Aug. 21	Sept. 1
Lehn & Fink	.50	Aug. 15	Sept. 1
Mathieson Alkali	.37½	Sept. 8	Oct. 2
Mathieson Alkali pf	$1.75	Sept. 8	Oct. 2
Monsanto Chemical	.31¼	Sept. 10	Oct. 2
Nat. Lead	$1.25	Sept. 15	Sept. 30
Nat. Lead pf A	$1.75	Sept. 1	Sept. 15
Nat. Lead pf B	$1.50	Oct. 20	Nov. 1
Patterson Sargent	.12½	Aug. 15	Sept. 1
Penick & Ford	.50	Sept. 1	Sept. 15
Penick & Ford ext	.50	Sept. 1	Sept. 15
Proctor & Gamble	.37½	July 25	Aug. 15
Proctor & Gamble, 5% pf	$1.25	Aug. 25	Sept. 15
Shawinigan W & P	.13	July 24	Aug. 15
Sherwin-Williams pf	$1.50	Aug. 15	Sept. 1
Sherwin-Williams	.25	July 31	Aug. 15
Solvay Amer. Invest pf	$1 37½	July 15	Aug. 15
Southern Acid & Sulphur	.50	Sept. 10	Sept. 15
Spencer Kellogg	.25	Sept. 15	Sept. 30
Texas Gulf Sulphur	.25	Sept. 1	Sept. 15
Union Carbide	.25	Sept. 1	Oct. 2
Vulcan Detinning pf	$1.75	Oct. 6	Oct. 20
Westvaco Chlorine Prods	.10	Aug. 15	Sept. 1

Annual and Special Meetings

	Record Date	Meeting Date
Amer. Agri. Chem. (Conn.)	Aug. 26	Sept. 14
Amer. Agri Chem. (Del.)	Aug. 26	Sept. 20
Chickasha Cotton Oil	Aug. 7	Sept. 12
Vanadium Corp. of Am	Aug. 12	Sept. 11

Removed From Curb

N. Y. Curb has removed Compressed Industrial Gases common from trading.

N. Y. Curb has also removed from unlisted privileges the City Bank Farmers Trust Co., American depositary, receipts for common bearer shares of the I. G. (par 100 R. M.)

Combustion Reorganization

Combustion Engineering Co., Inc., a newly organized company, took over properties of International Combustion Engineering Corp. and affiliated companies recently sold by order of the Federal Court as of Aug. 1. Properties acquired include those of Combustion Engineering Corp., Hedges-Walsh-Weidner Co., Coshocton Iron Co. and Raymond Bros. Impact Pulverizer Co. In order to assure best possible service to the company's customers, these properties will be operated under a single centralized management.

Officers of new organization are: Frederic A. Schaff, president; Joseph V. Santry, executive vice-president; Robert M. Gates, vice-president in charge of sales; Martens H. Isenberg, vice-president in charge of production; John Van Brunt, vice-president in charge of engineering; Harold H. Berry, treasurer; George W. Grove, secretary and assistant treasurer; George D. Ellis, comptroller.

Over the Counter Prices

	July 31		August 31	
American Hard Rubber	..	..	13	16½
J. T. Baker	..	..	..	..
Dixon	49	54	45½	50
Merck, pfd.	96½	100½	98½	101½
Worcester Salt	48	53	48	53
Young, J. S., pfd.	86	..	84	..
Young, J. S., com	58½	..	58½	..

London	July 31	August 31
British Celanese	16s 9d	16s 6d
Celanese	£7¾	£10
Courtaulds	£1¼	£2
Distillers	79s 3d	83s 9d
I. C. I.	29s 7½d	29s 7½d
Un. Molasses	13s 9d	14s
Paris		
Kuhlmann	650	690
L'Air Liquide	810	810
Berlin		
I. G. Farben	132	120
Milan		
Italgas	..	..
Montecatini	109	111½
Snia Viscosa	164½	173¾

Chemical (and related products) factory employment increased almost 5.5% in July. Volume was 22% larger than that in July, 1932. Payroll totals increased 4.3% from preceding month and stood 11.9 above July, 1932 level.

Index number of the Bureau of Labor Statistics for factory employment in the chemical industries was 83.1 for July (100 = monthly average for 1926), compared with 78.8 for June and 68 for July, 1932. Bureau's index number (same basis) for factory payroll totals in the chemical industries was 67.2 for July, compared with 64.4 for June and 56.5 for July, 1932. Employment and wages in the chemical industries continued better than the general average.

Employment

	July 1933	June 1933	July 1932
Chemicals	103.0	94.3	82.1
Cottonseed, oil, cake, & meal	31.4	27.9	28.1
Druggists' preparations	69.9	67.0	66.1
Explosives	83.3	75.4	66.6
Fertilizers	46.5	44.3	30.4
Paints and varnishes	78.7	76.4	68.9
Petroleum refining	64.7	64.7	64.1
Rayon and related products	167.6	154.9	92.9
Soap	101.5	99.5	93.1

Payroll Totals

	July 1933	June 1933	July 1932
Chemicals	75.5	69.1	58.6
Cottonseed, oil, cake, & meal	30.9	27.7	28.3
Druggists' preparations	66.6	66.1	64.2
Explosives	58.5	51.2	42.8
Fertilizers	29.8	27.9	24.0
Paints and varnishes	61.5	62.3	53.0
Petroleum refining	54.5	54.6	56.8
Rayon and related products	140.1	130.1	71.2
Soap	84.9	83.2	82.6

N. Y. State employment in manufacturing chemicals and related products, increased 0.9% between the middle of June and the middle of July, according to the division of statistics of the State Dept. of Labor. Employment in these lines in N. Y. City decreased 0.6%.

General factory employment in the State increased 4.2% in the period stated.

	1933 (100 = 1929 monthly average)			
	Employment		Payroll totals	
	July	June	July	June
Metalliferous mining	33.0	31.5	19.0	18.3
Quarrying and non-metallic mining	49.5	47.3	28.4	27.5
Crude petroleum production	59.5	58.0	42.2	40.5

Earnings at a Glance

Company	Annual Dividends	Net Income 1933	Net Income 1932	Common Share Earnings 1933	Common Share Earnings 1932
Air Reduction:					
June 30 quarter	$3.00	$720,485	$588,996	$ .85	$ .70
Six months, June 30	3.00	1,099,922	1,241,210	1.30	1.47
American Home Products:					
Six months, June 30	2.40	1,156,683	1,450,042	h1.72	h2.37
American-Maize Products:					
Six months, June 30	x1.00	462,476	208,501	1.54	.69
Blaw-Knox:					
Six months, June 30	f...	†102,075	†361,733	....	....
Clorox Chemical:					
Year, June 30	2.00	227,184	262,983	2.00	2.31
Columbian Carbon:					
June 30 quarter	2.00	243,967	191,991	.45	.36
Six months, June 30	2.00	486,300	469,945	.90	.87
Continental-Diamond Fibre:					
June 30 quarter	f...	†21,986	†159,487	....	....
Six months, June 30	f...	†160,440	†321,861	....	....
Eastman Kodak Co.:					
Seventeen weeks, June 17	3.00	4,348,624	3,731,615	1.84	1.57
Formica Insulation Co.:					
Six months, June 30	f...	†33,252	†14,282	....	....
Foster-Wheeler Corp.:					
Six months, June 30	f...	†436,588	†646,028	....	....
Freeport Texas Co.:					
Six months, June 30	2.00	1,019,091	1,060,743	j1.31	1.45
Glidden Co.:					
Nine months, July 31	f...	922,529	†37,439	.90	....
General Printing Ink:					
June 30 quarter	f...	108,065	53,924	.27	p1.33
Six months, June 30	f...	155,744	139,289	.21	.09
General Refractories:					
June 30 quarter	f...	58,026	†238,474	.22	....
Six months, June 30	f...	†147,329	†414,746	....	....
International Printing Ink:					
June 30 quarter	f...	†18,072	16,741	....	p.28
Six months, June 30	f...	†127,581	58,903	....	p1.00
Liquid Carbonic Corp.:					
Twelve months, June 30	f...	†508,735	533,921	....	1.56
National Distillers Products:					
June 30 quarter	f...	280,463	.....	....	....
Six months, June 30	f...	476,348	291,031	.80	.29
National Lead Co.:					
Six months, June 30	5.00	1,698,352	*.....	j2.82	....
Newport Industries, Inc.:					
June 30 quarter	f...	4,660	†79,042	....	....
Six months, June 30	f...	†10,694	†135,583	....	....
St. Joseph Lead Co.:					
Six months, June 30	f...	†1,303,212	†1,448,901	....	....
United Carbon Co.:					
June 30 quarter	1.00	‡171,760	‡42,969	....	....
Six months, June 30	1.00	‡300,731	‡104,636	....	....
United Chemical, Inc.:					
Six months, June 30	f...	†79,220	†12,165	....	....
United Piece Dye Works:					
Six months, June 30	f...	†919,144	†783,857	....	....
U. S. Gypsum Co.:					
Six months, June 30	1.00	831,541	963,789	h.47	h.57
U. S. Industrial Alcohol:					
Six months, June 30	f...	299,155	32,967	.80	.09
Vanadium Corp.:					
Six months, June 30	f...	†613,354	†801,627	....	....
Vanadium-Alloys Steel:					
Year, June 30	f...	†147,494	†326,745	....	....
Virginia-Carolina Chemical:					
Year, June 30	f...	†762,828	†783,509	....	....
Vulcan Detinning Co.:					
June 30 quarter	f...	77,914	26,136	1.56	p1.66
Six months, June 30	f...	94,996	56,175	1.25	.03

hOn shares outstanding at close of respective periods; xPlus extras; fNo common dividends; †Net loss; jOn average shares; pOn preferred stock; ‡Profit before Federal taxes.

American Agricultural Loss $508,127

American Agricultural Chemical (Delaware) and subsidiary companies for year ended June 30, certified by independent auditors, shows net loss of $508,127 after taxes, depreciation, depletion, provision for possible credit losses and reserve for self insurance, comparing with net loss of $1,224,056 in preceding fiscal year.

Current assets as of June 30, 1933, including $5,201,959 cash, amounted to $13,765,490 and current liabilities were $478,919. This compares with cash of $3,632,803, current assets of $13,436,290 and current liabilities of $445,016 at end of preceding fiscal year.

Consolidated income account for year ended June 30, 1933, compares as follows:

	1933	1932	1931
*Profit	$159,841	†$507,184	†$97,251
Depreciation & depletion	567,568	609,322	684,921
Reserve for self ins	100,400	107,550	.....
Net loss	$508,127	$1,224,056	$782,172

*After provision for possible credit losses. †Loss after interest on funded debt.

V-C Loss Slightly Below Previous Year

Virginia-Carolina Chemical and subsidiaries for year ended June 30, certified by independent auditors, shows net loss of $762,828 after depreciation, provision for losses on impounded bank accounts and federal stock tax. This compares with net loss of $783,509 in previous fiscal year. Bad debts charged to reserves, not included in above amounted to $774,146 for year ended June 30, 1933, against $816,193 in preceding year.

Company's proportion of net earnings of affiliated companies for their respective years ending within fiscal year ended June 30, 1933, amounting to $126,828, is $33,328 in excess of dividends received from such companies during that period. Such excess earnings are not included.

Current assets as of June 30, 1933, including $6,411,334 cash and U. S. Treasury notes, amounted to $11,589,222 and current liabilities were $183,209. This compares with cash and U. S. Treasury notes of $6,402,640, current assets of $16,383,348 and current liabilities of $138,558 at end of preceding fiscal year. Consolidated income account for year ended June 30, 1933, compares as follows:

	1933	1932
Gross earns after depr	$159,188	$157,322
Expenses	1,238,235	1,628,561
Oper loss	$1,079,047	$1,471,239
Net inc of owned cos	104,754	158,980
Other income	288,465	528,748
Loss	$685,828	$783,509
Prov for loss on bank accts	65,000	.....
Fed stock tax	12,000	.....
Net loss	$762,828	$783,509
Pr pfd divs	.....	371,700
Deficit	$762,828	$1,155,209

Columbian Carbon Earnings Gain

Columbian Carbon and subsidiaries in preliminary statement for 6 months ended June 30, show net income of $486,300 after depreciation, depletion, federal taxes and minority interests, equivalent to 90c a share on 538,420 shares of no-par stock. This compares with $469,945 or 87c a share in first half of 1932.

For quarter ended June 30, 1933, net income was $243,967 after charges and taxes, equal to 45c a share comparing with $242,333 or 45c a share in preceding quarter and $191,991 or 36c a share in June quarter of previous year. Consolidated income account for six months ended June 30, compares as follows:

	1933	1932	1931	1930
Net after fed tax	$946,872	$1,032,431	$1,616,018	$2,492,163
Depr & depl	494,586	600,562	799,368	771,447
Minority int	*34,014	*38,076	*43,082	127,536
Net income	$486,300	$469,945	$859,732	$1,593,180

Quarter ended June 30:

	1933	1932	1931	1930
Net after fed tax	$477,226	$431,656	$650,168	$1,237,187
Depr & depl	243,903	250,282	390,716	381,409
Minority int	*10,644	*10,617	*39,779	72,603
Net income	$243,967	$191,991	$299,231	$783,175

*Credit.

United Chemicals and subsidiaries report for 6 months ended June 30, net loss of $79,220 after depreciation, taxes and charges, comparing with net loss of $12,163 in first half of 1932. Current assets as of June 30, were $1,213,208 and current liabilities were $93,105, comparing with $1,358,654 and $167,414, respectively, on June 30, a year ago.

Standard Wholesale Phosphate & Acid reports a net income of $157,298 for fiscal year ended May 31, after expenses, depreciation and other charges, but before Federal taxes. Net was equal to $1.10 a share on 143,346 capital shares, and compared with $128,163, or 89c a share on 143,596 shares in the preceding fiscal year. Balance sheet as of May 31, 1933, showed current assets of $2,224,133.97 and current liabilities of $247,963.34. Surplus stood at $2,421,700.76 and total assets at $8,686,784.85.

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Special Fractions
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XYLENOLS
TAR ACID OILS
NAPHTHALENE
Crude, Refined Chipped, Flake
and Ball
RUBBER SOFTENERS
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Nickel Reports a Profit in 2nd Quarter

International Nickel and subsidiaries report for quarter ended June 30, net profit of $1,943,046 after depreciation, interest and taxes, equivalent after preferred dividends, to 10c a share on 14,584,025 no-par shares of common. This compares with net loss of $80,158 in preceding quarter and net loss of $629,327 in June quarter of previous year.

For 6 months ended June 30, 1933, net profit was $1,862,888 after charges and taxes, equal after preferred dividends, to 6c a common share, comparing with loss of $93,255 in first half of 1932.

Current assets, as of June 30, 1933, including $9,298,897 cash, demand loans and government securities, amounted to $31,592,-134 and current liabilities were $3,026,795. This compares with cash, demand loans and government securities of $3,640,099, current assets of $28,754,128 and current liabilities of $3,550,058 on June 30, 1932.

	1933	*1932*	*1931*	*1930*
Earnings	$3,347,960	$470,932	$3,248,560	$5,101,383
Other inc	64,852	18,452	63,728	134,486
Total inc	$3,412,812	$489,384	$3,312,288	$5,235,869
Expenses	258,378	257,670	314,515	385,968
Fed tax res	213,342	27,503	187,274	307,048
Interest	122,738	86, 220	118,574	124,317
Depr, depl, etc	875,308	747,318	991,676	1,150,806
Net profit	$1,943,046	†$629,327	$1,700,249	$3,267,730
Pfd divs	483,474	483,474	483,484	483,477
Com divs	.....	.....	2,186,835	3,439,113
Surplus	$1,459,572	*$1,112,801	*$970,070	*$654,860

Six months ended June 30:

	1933	*1932*	*1931*	*1930*
Earnings	$4,446,592	$2,235,886	$6,486,966	$11,721,189
Other income	72,597	21,164	79,703	431,619
Total inc	$4,519,189	$2,257,050	$6,566,669	$12,152,808
Expenses	482,993	534,130	689,009	833,239
Fed tax res	270,698	92,875	333,184	890,006
Interest	211,632	172,050	238,438	250,096
Depr, depl etc	1,690,978	1,551,250	1,946,152	2,295,593
Net profit	$1,862,888	†$93,255	$3,359,886	$7,883,784
Pfd divs	966,949	966,960	966,967	966,952
Com divs	.....	.....	4,373,628	6,877,989
Surplus	$895,939	*$1,060,215	*$1,980,709	$38,933

*Deficit. †Loss.

Vanadium Has a 6 Months Loss

Vanadium and subsidiaries report for 6 months ended June 30, net loss of $613,354 after taxes, depreciation, interest and other charges, but exclusive of $148,155 profit on purchase and retirement of bonds which was credited to capital surplus account. For 6 months ended June 30, last year, corporation reported net loss of $801,627 including $77,976 profit on purchase and retirement of corporation's own debentures, and after taxes, depreciation, interest and other charges.

Current assets as of June 30, 1933, including $1,126,066 cash and marketable securities at book value, being less than market value, amounted to $3,982,278 and current liabilities were $382,781. This compares with cash and marketable securities of $1,611,525, current assets of $5,164,296 and current liabilities of $321,647 on June 30, 1932. Consolidated income account for six months ended June 30, compares as follows:

	1933	*1932*	*1931*	*1930*
Net sales	$937,570	$639,231	$1,572,852	.....
Costs & exp	1,197,771	1,184,226	1,535,063	.....
Oper loss	$260,201	$544,995	†$37,789	†$845,883
Prof on debs retired	.....	77,976	.....	.....
Other inc	25,962	39,882	69,091	*743,045
Loss	$234,239	$427,137	†$106,880	†$1,588,928
Dep, etc	256,086	216,964	159,589	338,691
Loss on sale secur	.....	45,682	.....	.....
Interest	123,029	111,844	77,127	.....
Net loss	$613,354	$801,627	$129,836	†$1,250,237
Dividends	.....	.....	274,977	538,705
Deficit	$613,354	$801,627	$404,813	‡$711,532

*Includes profit on resale of company's own stock. †Profit. ‡Surplus.

Molybdenum Corporation of America reports for six months ended June 30: Net profit after Federal taxes and other charges, $35,255, against a net loss of $16,527 in the corresponding period last year.

Devoe & Raynolds Gains Sharply

Devoe & Raynolds and subsidiaries, report for six months ended May 31, 1933, profit of $48,629 after expenses, depreciation, etc., but before federal taxes, comparing with $13,548 for the six months ended May 31, 1932.

Current assets as of May 31, 2933, including $1,365,660 cash and federal and state short term obligations, amounted to $6,212, 784 and current liabilities were $854,094. This compares with cash and federal and state short term obligations of $1,114,517 current assets of $6,908,826 and current liabilities of $628,858 on May 31, 1932.

Consolidated income account for six months ended May 31, 1933, compares as follows:

	1933	*1932*	*1931*
Net sales	$3,464,693	$4,312,449	$5,758,464
Costs & exp	3,352,253	4,229,571	5,397,968
Depreciation	42,545	47,026	131,403
Oper prof	$69,895	$35,852	$229,093
Other income	52,539	62,633	71,725
Total income	$122,434	$98,485	$300,818
Disc misc adj etc	73,805	84,937	101,441
*Profit	$48,629	$13,548	$199,377

*Before federal taxes.

Glidden Makes Favorable Showing

Glidden reports for eight months ended June 30, 1933, net profit of $667,691 after depreciation, federal taxes, etc. equivalent after eight months dividend requirements on 7% prior preferred to 50c a share on 650,000 no-par shares of common stock. This compares with net profit of $55,117 equal after subsidiary preferred dividend requirements, to 57c a share (par $100) on 69,000 shares of 7% prior preferred for eight months ended June 30, 1932. Subsidiary preferred stock was called for redemption in October, 1932. June net profit was $307,062 after taxes and charges against net loss of $65,056 in June, 1932.

Archer-Daniels-Midland and subsidiaries report for year ended June 30, net profit of $1,209,293 after depreciation and federal taxes, equivalent after preferred dividend requirements, to $1.79 a share on 549,546 no-par shares of common stock. This compares with $882,343, or $1.17 a common share in preceding fiscal year.

Report of P. &. G. and subsidiaries for fiscal year ended June 30, 1933, shows net profit of $10,811,325 after depreciation, interest, federal taxes, advertising and special introductory work, equivalent after preferred dividends to $1.52 a share on 6,410,000 no-par shares of common. This compares with net profit of $9,132,545 or $1.26 a common share in preceding fiscal year. Gross sales for the year amounted to $102,463,645 comparing with $142,421,659 in previous year. For quarter ended June 30, last, net profit was $3,738,572 after depreciation, interest and other deductions, equivalent after preferred dividends, to 54c a share on the common comparing with $2,451,052, or 34c a common share in the preceding quarter when the first quarterly report was issued.

Atlas Powder and subsidiaries report for six months ended June 30, 1933, net profit of $129,257 after depreciation, federal taxes, etc., equivalent to $1.46 a share on 88,113 shares (par $100) of 6% preferred, excluding 10,496 shares in treasury. This compares with net loss of $154,398 in first half of 1932.

For quarter ended June 30, net profit was $137,288 after depreciation, taxes, etc., equal after dividend requirements on 6% preferred, to 8c a share on 234,720 no-par shares of common stock, excluding 26,718 shares in treasury. This compares with net loss of $8,031 in preceding quarter and net loss of $75,168 in June quarter of previous year.

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The Industry's Securities

1933 August Last	1933 August High	1933 August Low	1933 High	1933 Low	1932 High	1932 Low	Sales In August	Sales During 1933	Stocks	Par $	Shares Listed	An. Rate	Earnings $-per share-$ 1931	Earnings $-per share-$ 1930
NEW YORK STOCK EXCHANGE														
104⅜	107½	86½	107½†	47⅛	63½	30⅞	39,100	545,400	Air Reduction	No	841,288	$3.00	4.54	6.32
138½	143⅜	107½	143⅜†	70⅛	88½	42½	105,300	2,157,000	Allied Chem. & Dye	No	2,401,000	6.00	6.74	9.77
123½	123⅜	120½	123⅜	115	120†	96½	700	24,900	7% cum. pfd.	100	393,000	7.00		
29¼	30½	24	35	7¼	15½	3½	18,900	218,400	Amer. Agric. Chem.	100	333,000		Yr. Je. '30	Nil
64½	70⅛	36½	89⅞	13	27	11	480,800	1,880,100	Amer. Com. Alc. (new)	20	375,000			d1.27
27⅞	27⅞	25½	29⅛	9⅛	15½	7	5,500	88,800	Archer Dan. Midland	No	550,000	1.00	Yr. Aug. 30	1.68
29	33¼	23½	39¼	9	25½	7*	6,400	120,000	Atlas Powder Co.	No	261,438		.59	2.67
77½	80	78⅜	81½	60	79½	45½	1,010	6,184	6% cum. pfd.	100	96,000	6.00		
64½	66⅞	48¼	71½	23¼	41⅛	13½	44,000	810,800	Columbian Carbon	No	538,420	2.00	3.02	5.04
38½	40⅞	28⅛	57⅛	9	13⅜	3½	1,700,500	4,816,000	Comm. Solvents	No	2,530,000	.60	.83	1.07
86½	90⅜	75½	90⅜†	45⅜	55⅜	24½	90,700	1,357,800	Corn Products	25	2,530,000	3.00	3.54	4.82
138½	139½	136	145½	117½	140	99½	1,245	8,445	7% cum. pfd.	100	250,000	7.00		
80⅜	84⅜	65½	85½	32¼	59⅜	22	291,700	4,865,760	DuPont de Nemours	20	11,008,512	2.00	4.29	4.67
112½	116	112¼	117	97½	105½	80¼	2,100	36,300	6% cum. deb.	100	1,098,831	6.00		
84	85⅞	73½	89¼	46	87⅜	35¼	30,000	500,118	Eastman Kodak	No	2,261,000	3.00	5.78	8.84
122	125	122	130	110	125	99	130	1,560	6% cum. pfd.	100	62,000	6.00		
43	44¼	35½	44½†	16¼	28⅜	10	61,000	618,600	Freeport Texas Co.	No	730,000	2.00	3.26	w4.77
52½	56	40⅛	63	15	29½	13⅞	11,500	224,000	Hercules Powder Co.	No	606,234	1.50	1.04	2.61
108½	109	107	110	85	95	70½	170	3,490	7% cum. pfd.	100	114,241	7.00		
⅜	4	3	5⅛	⅞	3½	¼	9,300	148,900	Intern. Agric.	No	450,000		Yr. Je. '30	1.68
20	22½	19	27½	5	15	3¾	2,000	23,300	7% cum. prior pfd.	100	100,000	7.00	Yr. Je. '30	14.58
20⅜	21½	16⅞	22	6½	12½	3½	791,000	6,166,037	Intern. Nickel	No	14,584,000		.22	.67
17⅛	18⅛	14⅜	22	7½	11	8	5,900	59,100	Kellogg (Spencer)	No	598,000	.60		h1.14
34⅜	36	28⅛	50	10¼	22	9	55,700	745,700	Liquid Carbonic Corp.	No	342,000		2.96	5.22
37½	39½	28⅜	39½†	14	20⅞	9	38,600	402,000	Mathieson Alkali	No	650,426	1.50	1.88	2.96
71¼	74½	54¼	74½†	25	30½	13⅜	30,900	165,666	Monsanto Chem.	10	429,000	1.25	2.98	1.73
93½	97⅞	69¼	124⅞	16⅞	27½	13	623,800	3,399,700	National Dist. Prod. cts. (new)	No	252,000		—	1.23
126	127½	100	127½†	43¼	92	45	2,300	25,200	National Lead	100	310,000	5.00		7.58
126	126	125	126	101	125	87	300	5,055	7% cum. "A" pfd.	100	244,000	7.00		
108½	108½	103½	109¼	75	105	61	300	3,030	6% cum. "B" pfd.	100	103,000	6.00		
6½	7⅛	5⅞	7⅛†	1⅛	4⅜	1	25,900	154,000	Tenn. Corporation	5	858,204	1.00		1.21
32½	34⅛	25⅜	34⅛	15⅛	26⅜	12	111,100	1,043,200	Texas Gulf Sulphur	No	2,540,000	2.00	3.52	5.50
48	50¼	29	51⅛	19½	36⅜	15½	165,700	2,058,700	Union Carbide & Carb.	No	9,001,000	1.20	2.00	3.12
26⅛	29	21	30⅜	10½	18	6⅜	31,600	526,200	United Carbon Co.	No	398,000		—	1.43
72	76⅜	50½	94	13½	36⅛	13¼	326,700	2,026,200	U. S. Ind. Alc. Co.	No	373,846		—	z2.96
26½	28¼	21	36½	7⅞	23⅜	5½	114,800	1,097,400	Vanadium Corp. of Amer.	No	378,367			2.95
4½	5	4½	7⅜		2⅜	½	10,700	332,900	Virginia Caro. Chem.	No	487,000		Yr. Je. '30	Nil
18½	19½	16½	26½	3¾	11½	3⅜	1,700	74,800	6% cum. part. pfd.	100	213,000		Yr. Je. '30	2.63
60	60	59½	63¼	35½	69½	20	400	11,120	7% cum. prior pfd.	100	145,000		Yr. Je. '30	11.96
17⅛	18½	14⅛	20½	5	12⅜	1	5,800	90,500	Westvaco Chlorine Prod.	No		1.00	1.79	2.51
NEW YORK CURB														
14¼	14½	10½	15⅞	3¼	8½	1⅛	72,300	910,000	Amer. Cyanamid "B"	No	2,404,000		.21	
3⅜	3¼	3⅜	4½	1	2⅛	⅛	11,600	144,700	Brit. Celanese Am. Rcts.	2.43	2,806,000			
...	104	98½	110	27	55	8	1,475	25,890	Celanese 7% cum. part. 1st pfd.	100	148,000	7.00		
84½	84½	83	86½	51	64½	17	800	8,945	" 7% cum. prior pfd.	100	115,000	7.00		
12¼	12⅜	6½	16⅜	2	5⅜	1⅛	4,700	42,000	Celluloid Corp.	No	195,000			
...	9¼	8⅜	10¼	4¼	6⅞	4½	7,300	107,600	Courtaulds, Ltd.	1£				
...	74	55	78	30	39	21⅛	7,700	43,300	Dow Chemical	No	630,000	2.00		3.44
5½	8	2	8	½	1½	¼	15,900	38,300	Duval Texas Sulphur	No	500,000			
18½	19	16	19†	8	...	...	900	5,200	Heyden Chemical Corp.	10	150,000	1.00		
6	6	6	7	4¼	2⅞	2¼	100	1,150	Imperial Chem. Ind.	1£			1.21	
...	18¼	8	20⅜	8	20¼	6¼	1,200	26,350	Shawinigan W. & P.	No	2,178,000	1.00		
CLEVELAND STOCK EXCHANGE														
...	...	...	24	22	25	21⅜		811	Cleve-Cliffs Iron $5 pfd.	No	498,000	5.00	—	11.42
72	73	65	78	30	40	21½	1,107	11,313	Dow Chemical Co.	No	630,000	2.00		3.44
104½	104½	103	104½†	96	...	...	249	474	Dow Chemical Co., pfd.	100	3,000,000	7.00		
133½	135	133½	135	110	...	...	61	1,852	National Carbon, pfd.	100	5,600,000	7.00		
PHILADELPHIA STOCK EXCHANGE														
...	50	46½	50†	25½	40	19⅞	175	3,710	Pennsylvania Salt	50	150,000	3.00	Yr. Je. '30	7.97

1933 August Last	1933 August High	1933 August Low	1933 High	1933 Low	1932 High	1932 Low	Sales In August	Sales During 1933	Bonds	Date Due	Int. %	Int. Period	Out-standing $
NEW YORK STOCK EXCHANGE													
94½	94½	92½	94½†	70½	80	62	53	699	Amer. Cyan. deb. 5s	1942	5	A. O.	4,554,000
87½	88	84	89	64	80	54½	227	2,434	Amer. I. G. Chem. conv. 5½s	1949	5½	M. N.	29,933,000
...	10	6½	14½	2¼	18	1	87	1,033	Anglo-Chilean s. f. deb. 7s	1945	7	M. N.	14,600,000
...	66	65	74½	37	60	34½	19	321	By-Products Coke Corp. 1st 5½s "A"	1945	5½	M. N.	6,629,000
...	103	102½	104½	101	104⅛	100⅜	52	550	Corn Prod. Refin. 1st s. f. 5s	1934	5	M. N.	1,822,000
...	65	53	65†	38½	54⅛	32	8	225	Int. Agric. Corp. 1st coll. tr. stamped to 1942	1942	5½		
8⅛	10½	8⅛	14⅞	2½	15½	½	180	27,515	Lautaro Nitrate conv. 6s	1954	6	J. J.	32,000,000
90¼	93½	91	98½	87½	97⅛	67	115	649	Montecatini Min. & Agric. deb 7s with warrants	1937	7	J. J.	8,188,000
...	44	39½	62	33¾	59	17	35	316	Ruhr chemical s. f. 6s	1948	6	A. O.	3,578,000
...	98½	97½	99½	87	90	66	82	878	Solvay Am. Invest. 5% notes	1942	5	M. S.	15,000,000
70⅛	72	70⅛	76	50	66	39	29	220	Tenn. Corporation deb. 6s. "B"	1944	6	M. S.	3,308,000
70	73½	69	81	34½	75	30	115	1,432	Vanadium Corp. conv. 5s	1941	5	A. O.	5,000,000
NEW YORK CURB													
72⅛	75	70⅛	80½	49	76	55	209,000	2,747,000	Shawinigan W. & P. 4½s. "A"	1967	4½	A. O.	35,000,000
72⅛	75	71⅛	80½	50	76	55	100,000	1,359,000	4½s., series "B"	1968	4½	M. N.	16,108,000
...	103½	103	103⅛	101	103½	99	2,000	78,000	Westvaco Chlorine Prod. 5½s	1937	5½	M. S.	1,992,000

h 11 mos. ending Aug. 30 w 13 mos.; Before inventory adjustment; *New Low; †New High

ADVERTISING PAGES REMOVED

The Trend of Prices

Mixed Trends

August, usually a month of recession both for retail and wholesale trade, proved to be one of unusually good business. Consumer buying has broadened considerably.

In the heavy industries the story was somewhat different. Unfortunately the serious problems attending the adjustments necessary to operating under the Blue Eagle and the NRA have overshadowed interest in production schedules. Steel activity has declined to 40% as against a year high of 57%. Automobile schedules were lowered slightly in the last few weeks of August. Coal production, on the other hand, has expanded. Electrical production has shown some contraction but still is in excess of the same period a year ago. This is generally true, also, of most manufacturing lines. While the fast pace of June and July was not maintained through August, in most instances the rate of activity is exceeding 1932 by a wide margin.

It is quite logical that business and manufacturing should show very definitely signs of slackening in August. Under normal conditions the usual seasonal quietitude would not evoke comment; under present conditions the question naturally arises is it just "summer dullness" or is it more or less permanent. By a wide margin feeling of the country is that after Labor Day business will retrace its steps.

Commodity markets were largely in the doldrums in August but prices generally rallied from the low points reached in the 3rd week of July. Fisher's Index rose from 69.6 on July 28 to 70.8 on Sept. 1. While freight car loadings declined slightly in the latter part of August they ran between 15 and 20% above the corresponding periods a year ago. Building is still very much in the rear insofar as any real signs of awakening are concerned. While it is true that within recent months the totals have been better, they are still greatly below the 1932 figures.

The *N. Y. Times* Index of Business Activity reflects the curtailment of business.

With all series registering a decline, the index fell back more than 4 points for the week ended Aug. 26, the sharpest loss since the recession set in during the week ended July 22. The figure dropped to 84.9 from 89.3 in the previous week. A year ago the index stood at 65.6.

The sharp reaction in the cotton forwardings series was responsible for about half of the decline in the combined number. Figured without the cotton component, the index dropped from 84.3 to 81.8. The fall in the electric power and steel numbers contributed about ⅓ to the decline. All the other series, including steel, car loadings, lumber and automobile, declined in varying degrees.

The following table gives the combined index and its component series, which are adjusted for seasonal variations and, technically, for long-time trend.

	Week Ended		
	Aug. 26 1933	*Aug. 19 1933*	*Aug. 27 1932*
Combined Index	**84.9**	**89.3**	**65.6**
Without cotton fdgs.	81.8	84.3	...
Freight car loadings	61.0	62.7	51.0
Steel mill activity	75.2	80.9	20.0
Electric power prod't'n.	94.6	96.3	83.3
Automobile production.	63.3	67.7	26.4
Lumber production	64.6	68.5	35.2
Cotton forwardings	130.8	163.0	98.1

In most quarters the August recession is accepted as seasonal and temporary. With a large part of the codes now drawn up it is felt that business leaders can turn most of their attention again to their own individual business problems. The present wave of strikes is not likely to prove serious. With the fall season at hand—the busiest time of the year is before the country. With stocks admittedly low and purchasing power increasing through reemployment and wage increases, the outlook is much better than it has been in several years.

Chemical Tonnages

Chemical tonnages contracted noticeably in sympathy with the quieter conditions prevailing in business generally. Nevertheless, the totals were in most lines encouraging and producers are hopeful of further improvement with the end of the summer season. The textile group slowed down somewhat, due in part to strikes and also to the building up of inventories. Shoe manufacturers and tanners found it necessary to reduce activity but the glass industry continued to operate at a very high rate of speed. While automobile production slumped off from the June-July peak the rate was satisfactory and plating chemicals were in good demand. The fertilizer industry, on the other hand, passed through a very quiet and uneventful month. Paint and varnish producers report seasonal declines. In items rather actively traded in—such as naval stores, fats and oils, waxes and gums buying was largely of a routine nature and restricted for the most part to replacements. Most of the oils slipped down from the July highs. Linseed, while losing some ground, is in a good statistical position.

The National Fertilizer Association Indices show a loss in the 30 day period for fats and oils and fertilizer materials, a net gain for mixed fertilizer and no change for chemicals and drugs. The indices follow:

Group	*Latest Week Aug. 26 1933*	*Preceding Week*	*Month Ago*	*Year Ago*
Fuel	58.5	58.0	58.0	67.8
Textiles	65.2	64.8	67.1	47.9
Miscel. commod.	69.8	68.7	68.0	60.8
Automobiles	85.4	84.4	84.4	89.0
Building materials	74.7	74.7	74.1	71.5
Metals	78.5	78.5	78.2	68.5
Fats and oils	48.7	45.0	54.0	42.9
Chemicals & drugs	87.0	87.0	87.0	87.4
Fertilizer materials	65.1	65.7	66.7	61.8
Mixed fertilizer	66.7	66.7	65.9	71.0
All groups comb.	66.8	66.4	67.5	62.3

Argentine casein exports in 1st half of this year, according to official statistics, were substantially higher than those in corresponding period in 1932. This year's total was 11,149 metric tons, valued at 1,129,629 gold pesos, compared with 7,402 tons, valued at 289,933 pesos, in first half of 1932. Increase in value was especially marked, this year's average being 101.32 pesos per ton, against 39.17 pesos last year.

Trade association estimates, according to information received by the Dept. of Commerce, show following comparisons of the chief export markets in the two periods:—

	Kilos (First half-year)	
	1933	*1932*
Germany	5,140,364	3,809,291
England	1,752,705	960,606
Japan	954,300	183,780
United States	801,757	118,080
Italy	646,865	220,176
Netherlands	516,360	380,520
Finland	465,600	370,840
Sweden	384,540	442,250
Spain	318,361	211,375
Belgium	113,280	101,190

Indices of Business

	Latest Available Month	Previous Month	Year Ago
Automobile Production, July	233,088	253,322	109,143
–†Brokers Loans, Aug. 23	$853	$894	$355
*Building Contracts, July	$82,693	$102,341	$128,768
–*Car Loadings, Aug. 19	634	622	518
†Commercial Paper, July 31	$97	$72	$100
–†Elec. output., kwh., Aug. 19	1,650	1,627	1,431
Payrolls, July	49.9	46.1	39.6
Failures, Dun, July	1,421	1,648	2,707
*Merchandise Imports, July	$143,000	$122,000	$79,421
*Merchandise Exports, July	$145,000	$119,900	$106,830
Furnaces in Blast, %, Aug. 1	37.2	31.6	16.1
*Steel Orders, July 31	2,020	2,106	1,966

*000 omitted. †000,000. –Weeks, not months.

Prices Current

Heavy Chemicals, Coaltar Products, Dye-and-Tanstuffs, Colors and Pigments, Fillers and Sizes, Fertilizer and Insecticide Materials, Naval Stores, Fatty Oils, etc.

Chemical prices quoted are of American manufacturers for spot New York, immediate shipment, unless otherwise specified. Products sold f. o. b. works are specified as such. Imported chemicals are so designated. Resale stocks when a market factor are quoted in addition to makers' prices and indicated "second hands."

Oils are quoted spot New York, ex-dock. Quotations f.o.b. mills, or for spot goods at the Pacific Coast are so designated.

Raw materials are quoted New York, f. o. b., or ex-dock. Materials sold f. o. b. works or delivered are so designated.

The current range is not "bid and asked," but are prices from different sellers, based on varying grades or quantities or both. Containers named are the original packages most commonly used.

Purchasing Power of the Dollar: 1926 Average—$1.00 - 1932 Average $1.64 - Jan. 1932 $1.54 - Aug. 1933 $1.42

	Current Market	1933 Low	1933 High	1932 Low	1932 High
Acetaldehyde, drs lc-l wks...lb.	.18½	.21	.18½	.21	.18½	.21
Acetaldol, 50 gal dr.....lb.	.27	.31	.27	.31	.27	.31
Acetamide.....lb.	.95	1.35	.95	.35	.95	1.35
Acetanilid, tech, 150 lb bbl...lb.	....	.26	...	.26	.20	.26
Acetic Anhydride, 92-95%, 100 lb cbys.....lb.	.21	.25	.21	.25	.21	.25
Acetin, tech drums.....lb.	.30	.32	.30	.32	.30	.32
Acetone, tanks.....lb.	.08	.08½	.08	.10	...	.10
Acetone Oil, bbls NY.....gal.	1.15	1.25	1.15	1.25	1.15	1.25
Acetyl Chloride, 100 lb cby...lb.	.55	.68	.55	.68	.55	.68
Acetylene Tetrachloride (see tetrachlorethane).....						
Acids						
Acid Abietic.....	....	.06	.06	.12	.12	.12
Acetic, 28% 400 lb bbls c-l wks .....100 lb.	....	2.91	2.65	2.91	2.40	2.75
Glacial, bbl c-l wk....100 lb.	...	10.02	9.14	10.02	8.35	9.14
Adipic.....	.72	.72	.72	.72	.72	.72
Anthranilic, refd, bbls.....lb.	.85	.95	.85	.95	.85	.95
Technical, bbls.....lb.	.65	.70	.65	.70	.65	.70
Battery, cbys.....100 lb.	1.60	2.25	1.60	2.25	1.60	2.25
Benzoic, tech, 100 lb bbls....lb.	.40	.45	.35	.45	.35	.45
Boric, powd, 250 lb. bbls. .....lb.	.0425	.05	.0425	.05	.0425	.07
Broenner's, bbls.....lb.	1.20	1.25	1.20	1.25	1.20	1.25
Butyric, 100% basis cbys....lb.	.80	.85	.80	.85	.80	.85
Camphoric.....lb.	....	5.25	...	5.25	.....	5.25
Chlorosulfonic, 1500 lb drums wks.....lb.	.04½	.05½	.04½	.05½	.04½	.05½
Chromic, 99½%, drs.....lb.	.12	.12½	.11½	.12½	.11½	.14½
Chromotropic, 300 lb bbls....lb.	1.00	1.06	1.00	1.06	1.00	1.06
Citric, USP, crystals, 230 lb. bbls.....lb.	.29	.30	.29	.30	.29	.33½
Cleve's, 250 lb bbls.....lb.	.52	.54	.52	.54	.52	.54
Cresylic, 95%, dark drs NY.gal.	.42	.45	.38	.45	.40	.47
97-99%, pale drs NY.....gal.	....	.45	.40	.45	.42	.50
Formic, tech 90%, 140 lb. cby.....lb.	.10½	.12	.10½	.12	.10½	.12
Furoic, tech., 100 lb. drums.lb.	....	.35	...	.35	.....	.....
Gallic, tech, bbls.....lb.	.60	.70	.60	.70	.60	.70
USP, bbls.....lb.	....	.74	...	.74	.....	.74
Gamma, 225 lb bbls wks.....fb	.77	.79	.75	.79	.75	.80
H, 225 lb bbls wks.....lb.	.65	.70	.60	.70	.60	.65
Hydriodic, USP, 10% soln cby lb.	.50	.51	.50	.51	.59	.67
Hydrobromic, 48%, coml, 155 lb cbys wks.....lb.	.45	.48	.45	.48	.45	.48
Hydrochloric, CP, see Acid Muriatic.....						
Hydrocyanic, cylinders wks .lb.	.80	.90	.80	.90	.80	.90
Hydrofluoric, 30%, 400 lb bbls wks.....lb.	....	07	06	07	.....	.06
Hydrofluosilicic, 35%, 400 lb. bbls wks.....lb.	.11	.12	.11	.12	.11	.12
Hypophosphorous, 30%, USP, demijohns .....lb.	.75	.80	.75	.80	.75	.85
Lactic, 22%, dark, 500 lb bbls lb.	.04	.04½	.04	.04½	.04	.04½
44%, light, 500 lb bbls.....lb.	.11½	.12	.11½	.12	.11½	.12
Laurent's, 250 lb bbls.....lb.	.36	.37	.36	.37	.36	.42
Linoleic.....lb.	.16	.16	.16	.16	.16	.16
Maleic, cry. kegs.....lb.	....	.35	...	...	...	...
Malic, powd, kegs.....lb	.45	.60	.45	.60	.45	.60
Metanilic, 250 lb bbls.....lb	.60	.65	.60	.65	.60	.65
Mixed Sulfuric - Nitric..... tanks wks.....N unit	.06½	.07½	.06½	.07½	.07	.07½
tanks wks.....S unit	.008	.01	.008	.01	.008	.01
Monochloroacetic, tech bbl...lb.	.16	.18	.16	.18	.16	.18
Monosulfonic, bbls.....lb.	1.50	1.60	1.50	1.60	1.55	1.70
Muriatic, 18 deg, 120 lb cbys c-1 wks.....100 lb.	....	1.35	...	1.35	.....	1.35
tanks, wks.....100 lb.	....	1.00	...	1.00	.....	1.00
20 degrees, cbys wks...100 lb.	....	1.45	...	1.45	.....	1.45
N & W .....250 lb bbls	.85	.95	.85	.95	.85	.95
Naphthenic, drums.....lb.	.10	.11½	.10	.11½	...	...
Naphthionic, tech.....250 lb.	.60	.65	.60	.65	60	65
Nitric, 36 deg, 135 lb cbys c-wks. .....100 lb.	....	5.00	...	5.00	....	5.00
40 deg, 135 lb cbys, c-1 wks.....100 lb.	....	6.00	...	6.00	.....	6.00
Oxalic, 300 lb bbls wks NY....lb.	.11	.11½	.11	.11½	.11	.11½
Phosphoric 50%, U. S. P.....lb.	....	.14	...	.14	.....	.14
Syrupy, USP, 70 lb drs....lb.	....	.14	...	.14	.....	.14
Picramic, 300 lb bbls.....lb.	.65	.70	.65	.70	.65	.70
Picric, kegs.....lb.	.30	.50	.30	.50	.30	.50
Pyrogallic, crystals..... .....lb.	1.40	1.45	1.40	1.45	1.45	1.60
Salicylic, tech, 125 lb bbl.....lb.	.33	.37	.33	.37	.33	.37
Sebacic tech, drum.....lb.	.58	.58	.58	.58	.....	.....
Sulfanilic, 250 lb. bbls.....lb.	.15	.17	.15	.17	.14½	.16

†Anhydrous 5c higher. ‡From grain 5c higher. *Delivered metropolitan area, basic price 34c. §Higher price is refrigeration grade.

	Current Market	1933 Low	1933 High	1932 Low	1932 High
Sulfuric, 66 deg, 180 lb cbys lc-l wks.....100 lb.	1.60	1 95	1.60	1.95	1.60	1.95
tanks, wks, ton	....	15.00	....	15.00	.....	15.00
1500 lb dr wks.....100 lb.	1.50	1.65	1.50	1.65	1.50	1.65
60°, 1500 lb dr wks....100 lb.	1.27½	1.42½	1.27½	1.42½	1.27½	1.42½
Oleum, 20%, 1500 lb. drs lc-l wks.....ton	....	18.50	....	18.50	.....	18.50
40%, lc-l wks net.....ton	....	42.00	....	42.00	.....	42.00
Tannic, tech, 300 lb bbls...lb.	.23	.40	.23	.40	.23	.40
Tartaric, USP, gran. powd, 300 lb bbls.....lb.	....	24½	.20	.24½	.20	.25½
Tobias, 250 lb bbls.....lb.	.75	.80	.75	.80	.75	.85
Trichloroacetic bottles.....lb.	2.00	2.75	2.00	2.75	.....	2.75
Kegs.....lb.	....	1.75	....	1.75	.....	2.00
Tungstic, bbls.....lb.	1.40	1.70	1.40	1.70	1.40	1.70
Albumen, blood, 225 lb bbls...lb.	.35	.43	.35	.43	.35	.40
dark.....bbls., lb.	.10	.17	.10	.17	10	.20
Egg, edible .....lb.	.81	.83	.74	.83	.75	.90
Technical, 200 lb cases...lb.	.62	.66	.62	.66	.62	.66
Vegetable, edible.....lb.	.65	.70	.60	.70	.60	.65
Technical.....lb.	.50	.55	.50	.55	.50	.55
Alcohol						
Alcohol Butyl, Normal, 50 gal drs c-1 wks.....lb.	....	.10½	....	.10½	.123	.1595
Drums, 1-c-1 wks.....lb	....	.11	....	.11	.128	.1645
Tank cars wks.....lb.	....	.09½	....	.09½	.113	.143
Secondary tank .....lb.	....	.076	....	....	.....	....
drums carlots .....lb.	....	.086	....	....	.....	....
Amyl (from pentane) Tanks wks .....lb.	....	.143	.143	.176	.176	.203
Capryl, tech, drums.....lb.	....	.85	....	.85	.....	.85
Diacetone, tanks.....lb.	.15½	.16½	.15½	.16½	.....	.....
Ethyl, USP, 190 pf, 50 gal. bbls‡.....gal.	2.41½	2.58½	2.41½	2.65	2.55	2.65
No. 5. *188 pf, 50 gal. drs. drums extra†.....gal.	....	.351*	....	.385*	.27	.396
No. S. D. 1, tanks .....gal.	....	.304	....	.30¼	.....	.....
Furfuryl, tech., 500 lb. drs.lb	....	.40	.40	.45	.....	.....
Isobutyl, ref., gal. drs.....gal.	....	.75	....	.75	.....	.75
Isopropyl, ref, gal drs.....gal.	....	.50	.45	.50	.45	.65
Propyl Normal, 50 gal dr..gal.	....	.75	....	.75	....	.75
Aldehyde Ammonia, 100 gal drlb.	.80	.82	.80	.82	.80	.82
Alpha-Naphthol, crude, 300 lb. bbls.....lb.	.65	.70	.65	.70	.57	.65
Alpha-Naphthylamine, 350 lb. bbls.....lb.	.32	.34	.32	.34	.32	.34
Alum Ammonia, lump, 400 lb bbls, 1-c-1 wks.....100 lb.	3.00	3.25	3.00	3.25	3.00	3.25
Chrome, 500 lb casks, wks .....100 lb.	4.50	5.25	4.50	5.25	4.50	5.25
Potash, lump, 400 lb casks wks.....100 lb.	3.00	3.50	3.00	3.50	3.00	3.50
Soda, ground, 400 lb bbls wks .....100 lb	3.50	3.75	3.50	3.75	3.50	3.75
Aluminum Metal, c-1 NY.100 lb.	22.90	24.30	22.00	24.30	22.90	24.30
Chloride Anhydrous .....lb.	.04	.08	.04	.09	.05	.09
Hydrate, 96%, light, 90 lb. bbls.....lb.	.15	.16½	.15	.16½	.15	17
Resinate, pp., bbls.....lb.	12½	14	...	...	...	...
Stearate, 100 lb bbls.....lb.	16	.17	.12½	.17	.15	.21
Sulfate, Iron, free, bags c-1 wks .....100 lb.	1.90	1.95	1.90	1.95	1.90	1.95
Coml, bags c-1 wks .100 lb.	1.25	1.30	1.25	1.30	1.25	1.30
Aminoazobenzene, 110 lb kegs lb.	....	1.15	....	1.15	.....	1.15
Ammonia						
Ammonia anhydrous Com. tanks	04½	05½§	04½	05½	.05	.05½
Ammonia, anhyd. 100 lb cyl...lb	.15½	.15½	.15½	.15½	.15½	.15½
Water, 26°, 800 lb dr del...lb	.02½	.03	.02½	.03	.02½	.03
Ammonia, aqua 26° tanks.... NH cont.....	....	.05	.....	.05	.....	.....
Ammonium Acetate .....lb.	.26	.33	.26	.33	.26	.39
Bicarbonate, bbls., f.o.b. plant .....100 lb.	....	5.15	....	5.15	.....	5.15
Bifluoride, 300 lb bbls....lb.	.14½	.17	.14½	.17	14½	.22
Carbonate, tech, 500 lb cs .lb.	.08	.12	.08	.12	.08	.12
Chloride, white, 100 lb. bbls wks .....100 lb.	4.45	4.90	4.45	4.90	4.45	5.15
Gray, 250 lb bbls wks...lb	5.25	5.75	5.25	5.75	5.25	5.75
Lump, 500 lb cks spot...lb.	10	11	.10	.11	.10½	11½
Lactate, 500 lb bbls.....lb.	.15	.16	.15	.16	.15	16
Linoleate.....lb.	....	.11	....	.11	.11	.15
Nitrate, tech, casks.....lb.	.03¾	05	.03¾	.10	.06	.10
Oleate, drs.....lb.	....	.10	....	.10	.....	.10
Persulfate, 112 lb kegs.....lb.	.20	.22½	.20	.22½	.20	.27½
Phosphate, tech, powd, 325 lb. bbls.....lb.	.08½	.11½	.08½	.11½	.08½	.12
Sulfate, bulk c-1.....100 lb.	...	1.20	1.00	1.20	.90	1.40
Sulfocyanide, kegs.....lb.	.36	.48	.36	.48	.36	.48
Amyl Acetate, (from pentane) Tanks del.....lb.	....	.13½	...	.13½	.157	.17½

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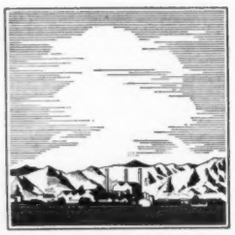

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BEekman 3-1923

	Current Market	1933 Low	1933 High	1932 Low	1932 High
Tech., drs del. lb.	.142	.149	.138	.149	.17½	.18
Amyl Alcohol, see Fusel Oil						
Aniline Oil, 960 lb drs & tks. lb.	.13½	.14½	.14½	.16	.14½	.16
Annatto, fine lb.	.34	.37	.34	.37	.34	.37
Anthracene, 80% lb.	....	.75	....	....	.....	.....
40% lb.	....	.18	....	....	.....	.....
Anthraquinone, sublimed, 125 lb. bbls lb.	....	.45	...	.45	.45	.55
Antimony, metal slabs, ton lots lb.	.06¾	.07	.05½	.07½	.05	.06½
Needle, powd, bbls lb.	.08	.09	.07	.09	.08½	.09
Chloride, soln (butter of) cbys lb.	.13	.17	.13	.17	.13	.17
Oxide, 500 lb bbls lb.	.08½	.11	.07½	.11	.07½	.08¾
Salt, 63% to 65%, tins lb.	.22	.24	.20	.24	.20	.24
Sulfuret, golden, bbls lb.	.16	.20	.16	.20	.16	.20
Vermillion, bbls lb.	.38	.42	.38	.42	.38	.42
Archil, conc, 600 lb bbls lb.	.20	.21	.20	.21	.17	.21
Double, 600 lb bbls lb.	.16	.17	.16	.17	.16	.17
Triple, 600 lb bbls lb.	.16	.17	.16	.17	.16	.17
Argols, 80%, casks lb.	.14	.15	.12	.15	.12½	.13
Crude, 30%, casks lb.	.07½	.08½	.06¾	.09	.07	.07½
Aroclors, wks lb.	.18	.30	.18	.30	.18	.40
Arrowroot, bbl lb.	.08½	.08¾	....	....	.....	.....
Arsenic, Red. 224 lb kegs, cs. lb.	.13	.13¾	.09¾	.13¾	.09¾	.10
White, 112 lb kegs lb.	.04	.05	.04	.05	.04	.05
Asbestine, c-1 wks ton	13.00	15.00	13.00	15.00	.....	15.00
Barium						
Barium Carbonate, precip, 200 lb. bags wks ton	56.50	61.00	56.50	61.00	47.00	57.00
Nat. (witherite) 90% gr. carlots wks bags ton	....	40.00	....	....	.....	.....
Chlorate, 112 lb kegs NY lb.	.15	.16	.13¾	.16	.13¾	.15
Chloride, 600 lb bbl wks ton	61.50	65.00	61.50	69.00	63.00	69.00
Dioxide, 88%, 690 lb drs lb.	.11	.13	.11	.13	.11	.13
Hydrate, 500 lb bbls lb.	.04¾	.05	.04¼	.05	.04¼	.05½
Nitrate, 700 lb casks lb.	....	.07¼	...	.07½	.07	.08
Barytes, Floated, 350 lb bbls wks ton	22.50	30.50	22.20	30.50	22.00	24.00
Bauxite, bulk, mines ton	5.00	6.00	5.00	6.00	5.00	6.00
Bayberry, bags lb.	.14	.15	.14½	.17	.....	.....
Beeswax, Yellow, crude bags lb.	.18½	.20	.13	.20	.14½	.24
Refined, cases lb.	.22	.26	.18	.26	.20	.28
White, cases lb.	.32	.35	.30	.35	.30	.36
Benzaldehyde, technical, 945 lb. drums wks lb.	.60	.65	.60	.65	.60	.65
Benzene, 90%, Industrial, 8000 gal tanks wks gal.	....	.22	.20	.22	.....	.20
Ind. Pure, tanks works gal.	....	.22	.20	.22	.....	.20
Benzidine Base, dry, 250 lb. bbls lb.	.67	.69	.65	.67	.65	.67
Benzoyl, Chloride, 500 lb drs lb.	.40	.45	.40	.45	.40	.47
Benzyl Chloride, tech drs lb.	....	30	...	.30	.....	.30
Beta-Naphthol, 250 lb bbl wk lb.	....	.22	...	.22	.....	.22
Naphthylamine, sublimed, 200 lb bbls lb.	1.25	1.35	1.25	1.35	1.25	1.35
Tech, 200 lb bbls lb.	.53	.58	.53	.58	.53	.58
Bismuth, metal	....	1.20	.85	1.20	.....	.....
Bismuth Subnitrate	....	1.40	.95	1.40	.....	.....
Blackstrap, cane, tanks, f. o. b. N. Y. gal.	....	.06½	....	....	.....	.....
Blanc Fixe, 400 lb bbls wks. ton	42.50‡	70.00	42.50	75.00	.....	.....
Bleaching Powder, 800 lb drs c-1 wks contract . . 100 lb.	1.75	2.00	1.75	2.00	1.75	2.00
Blood, Dried, fob, NY Unit	2.65	2.70	1.55	2.70	1.20	1.90
Chicago, high grade Unit	2.00	2.20	....	....	.....	.....
S. American shipt Unit	2.60	2.65	1.90	3.00	2.00	2.25
Blues, Bronze Chinese Milori Prussian Soluble lb.	....	.35	....	.35	.....	.35
Bone, raw, Chicago ton	26.00	28.00	19.00	28.00	20.00	22.00
Bone Ash, 100 lb kegs lb.	.06	.07	.06	.07	.06	.07
Black, 200 lb bbls lb.	.05½	.08½	.05½	.08½	.05½	.08¼
Meal, 3% & 50%, Imp. ton	.....	26.00	18.00	26.00	20.00	23.00
Borax, bags lb.	.018	.02	.018	.02	.018	.03½
Bordeaux, Mixture, 16% pwd. lb.	.08½	.10½	.11½	.10½	.11½	.13
Paste, bbls lb.	.08½	.13	.10½	.13	.11½	.13
Brazilwood, sticks, shpmt lb.	26.00	28.00	26.00	28.00	26.00	28.00
Bromine, cases lb.	.36	.43	.36	.43	.36	.43
Bronze, Aluminum, powd blk. lb.	.50	.75	.50	.75	.60	1.20
Gold bulk lb.	.40	.55	.40	.55	.55	1.25
Butanes, com 16.32° group 3 tanks lb.	.....	.04	.02¾	.04	.....	.....
Butyl, Acetate, normal drs. lb.	.....	.11	.11	.139	.134	.166
Tank, wks. lb.	.....	.10	.10	.124	.124	.143
Secondary tanks, wks. lb.	....	.08	....	....	.....	.....
Aldehyde, 50 gal drs wks. lb.	.35	.36	.31½	.36	.31½	.36
Carbitol see Diethylene Glycol Mono (Butyl Ether)	.....	.....	....	....	.....	.....
Cellosolve (see Ethylene glycol mono butyl ether)						
Furoate. tech.. 50 gal. dr. lb.	.....	.60	.50	.60	.....	.50
Lactate, drums lb.	....	.29	....	....	.....	.....
Propionate, drs lb.	.20	.22	.20	.22	.20	.25
Stearate, 50 gal drs. lb.	.25	.25½	.25	.25½	.25	.25½
Tartrate, drs lb.	.55	.60	.55	.60	.55	.60
Cadmium, Sulfide, boxes lb.	.65	.75	.65	.75	.65	.90
Calcium, Acetate, 150 lb bags c-1 100 lb.	.....	3.00	2.50	3.00	2.00	2.50
Arsenate, 100 lb bbls c-1 wks lb.	.....	.07	.05½	.07	.05½	.06
Carbide, drs lb.	.05	.06	.05	.06	.05	.06
Carbonate, tech, 100 lb bags c-1 lb.	1.00	1.00	1.00	1.00	1.00	1.00
Chloride, Flake, 375 lb drs c-1 wks ton	.....	19.50	19 50	21.00	.....	21.00
Solid, 650 lb drs c-1 fob wks ton	.....	17.50	17.50	18.00	.....	18.00

†F. O. B. destination, 1931 prices are works prices.
‡Lowest price is for pulp; highest for high-grade precipitate.

Current

	Current Market	1933 Low	1933 High	1932 Low	1932 High
Calcium Furoate, tech, 100 lb. drums lb		.30		.30		.30
Nitrate, 100 lb bags ton	24.50	26.00	24.00	26.00	34.00	35.00
Palmitate, bbls lb	.18	.19	.16	.19		
Peroxide, 100 lb drs lb		1.25		1.25		1.25
Phosphate, tech, 450 lb bbls lb	.07½	.08	.07½	.08	.07½	.08½
Resinate, precip., bbls lb	.13	.14				
Stearate, 100 lb. bbls lb	.16	.17	.12½	.17	.16	.18
Camphor, slabs lb		.47	.35½	.52		
Powder lb		.48	.38	.52		
Camwood, Bark, ground bbls lb	.16	.18	.16	.18	.16	.18
Candelilla Wax, bags lb	.09	.10	.09	.11	.10	.14
Carbitol, (See Diethylene Glycol Mono Ethyl Ether)						
Carbon, Decolorizing, drums c-1 lb	.08	.15	.08	.15	.08	.15
Black, 100-300 lb cases 1c-1 NY lb	.06	.12	.06	.12	.06	.12
Bisulfide, 500 lb drs 1c-1 NY lb	.05½	.06	.05½	.06	.05½	.06
Dioxide, Liq. 20-25 lb cyl. lb		.06		.06		.06
Tetrachloride, 1400 lb drs delivered lb	.05½	.06	.05½	.07	.06½	.07
Carnauba Wax, Flor, bags lb	.31	.32	.23	.31	.23	.28
No. 1 Yellow, bags lb	.29	.30	.20	.30	.21	.24
No. 2 N Country, bags lb	.16½	.17	.14	.18	.13	.16
No. 2 Regular, bags lb	.28	.29	.20	.29	.20	.24
No. 3 N. C. lb		.14¼	.11½	.16	.11	.13
No. 3 Chalky lb	.13½	.14	.12	.14	.11	.13
Casein, Standard, Domestic ground lb	.14¼	.15	.06½	.15	.04¾	.07½
80-100 mesh carlots, bags lb	.15½	.16				
Cellosolve (see Ethylene glycol mono ethyl ether)						
Acetate (see Ethylene glycol mono ethyl ether acetate)						
Celluloid, Scraps, Ivory cs lb	.13	.14	.13	.15	.13	.15
Shell, cases lb	.18	.20	.18	.20	.18	.20
Transparent, cases lb		.16		.16		.15
Cellulose, Acetate, 50 lb kegs lb	.80	.90	.80	.90	.80	.90
Chalk, dropped, 175 lb bbls lb	.03	.03¼	.03	.03¼	.03	.03¼
Precip, heavy, 560 lb cks lb	.02	.03½	.02	.03½	.02	.03½
Light, 250 lb casks lb	.02½	.03½	.02½	.03½	.02½	.03½
Charcoal, Hardwood, lump, bulk wks bu	.18	.19	.18	.19	.18	.19
Willow, powd, 100 lb bbl. wks lb	.06	.06¼	.06	.06½	.06	.06¼
Wood, powd, 100 lb bbls lb	.04	.05	.04	.05	.04	.05
Chestnut, clarified bbls wks lb	.01⅝	.02	.01⅝	.02	.01⅝	.02
25% tks wks lb		.01½	.012	.01½	.07¾	.02½
Powd, 60%, 100 lb bgs wks lb		.04½		.04½		.04½
Powd, decolorized bgs wks lb	.04½	.05	.04⅝	.05	.04⅞	.06
China Clay, lump, blk mines ton	8.00	9.00	8.00	9.00	8.00	9.00
Powdered, bbls lb	.01	.02	.01	.02	.01	.02
Pulverized, bbls wks ton	10.00	12.00	10.00	12.00	10.00	12.00
Imported, lump, bulk ton	15.00	25.00	15.00	25.00	15.00	25.00
Chlorine, cyls 1c-1 wks contract lb	.07	.08½	.07	.08½	.07	.08½
cyls, cl., contract lb		.05½†		.05½		.05½
Liq tank or multi-car lot cyls wks contract 100 lb		1.75		1.75	1.55	1.75
Chlorobenzene, Mono, 100 lb. drs 1c-1 wks lb	.06	.07½	.06	.07½	.06	.10½
Chloroform, tech, 1000 lb drs lb		.20	.15	.20	.15	.16
USP, tins lb		.30				
Chloropicrin, comml cyls lb	.90	1.25	.90	1.35	1.00	1.35
Chrome, Green, CP lb	.23	.29	.23	.29	.23	.29
Commercial lb	.06½	.10	.06½	.10	.06½	.11
Yellow lb	.14	.15	.14	.15	.14	.18
Chromium, Acetate, 8% Chrome bbls lb	.05	.05½	.04½	.05½	.04½	.05½
20° soln, 400 lb bbls lb		.05½		.05½		.05½
Fluoride, powd, 400 lb bbl lb	.27	.28	.27	.28	.27	.28
Oxide, green, bbls lb	.28	.33	.28	.33	.28	.35½
Coal tar, bbls bbl	8.50	9.00	.50	9.00	10.00	10.50
Cobalt Acetate, bbls lb	.75	.80				
Carbonate tech., bbls lb	1.34	1.40				
Hydrate, bbls lb	1.66	1.76				
Linoleate, paste, bbls lb	.39	.40				
Resinate, fused, bbls lb		.12½				
Precipitated, bbls lb	.41	.42	.41	.42		
Cobalt Oxide, black, bags lb	1.15	1.25	1.15	1.25	1.15	1.45
Cochineal, gray or black bag lb	.36	.42	.36	.42	.38	.57
Teneriffe silver, bags lb	.37	.43	.37	.43	.39	.57
Copper, metal, electrol 100 lb		9.00	5.00	9.00	5.05	7.25
Carbonate, 400 lb bbls lb		.08	.07	.08	.07	.08
52-54% bbls lb	.16½	.17¼	.15¾	.17¼		
Chloride, 250 lb bbls lb	.17	.18	.17	.18	.17	.25
Cyanide, 100 lb drs lb	.39	.40	.39	.40	.39	.40
Oleate, precip., bbls lb		.20				
Oxide, red, 100 lb bbls lb	.14¾	.15	.14¾	.15	.15	.16
Resinate, precip., bbls lb	.18	.19				
Stearate, precip., bbls lb	.35	.40				
Sub-acetate verdigris, 400 lb bbls lb	.18	.19	.18	.19	.18	.19
Sulfate, bbls c-1 wks 100 lb		3.75	3.00	3.75	2.75	3.10
Copperas, crys and sugar bulk c-1 wks bags ton	14.00	14.50	14.00	14.50	14.00	14.50
Corn Syrup, 42 deg., bbls. 100 lb		2.88	2.61	2.88		
43 deg., bbls 100 lb		2.93	2.66	2.93		
Cotton, Soluble, wet, 100 lb bbls lb	.40	.42	.40	.42	.40	.42
Cottonseed, S. E. bulk c-1 ton		26.50		26.50		26.50
Meal S. E. bulk ton						
7% Amm., bags mills ton	13.25	38.00	13.25	38.00	13.25	38.00
Cream Tartar, USP, 300 lb. bbls lb		.17½	.14½	.17½	.15½	.20½
Creosote, USP, 42 lb cbys lb	.45	.47	.40	.47	.40	.42
Oil, Grade 1 tanks gal	.11	.12	.11	.12	.11	12½
Grade 2 gal	.10	.12	.10	.12	.10	.11½
Grade 3 gal	.09	.12	.09	.12	.09	.11½
Cresol, USP, drums lb	.10½	.11	.10½	.11	.10½	.11

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Whether your order calls for a 100 pound crate or a 68,000 pound tank car, you can depend on Niacet Glacial Acetic Acid being delivered to you promptly, economically and without mishap.

We're specialists in Acetic Acid. That means you can get it when you want it . . . as you want it. Our standard Glacial Acetic Acid is 99.5% pure. We can also supply special grades in any concentration up to 99.95%.

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Acetaldol
Crotonaldehyde
Paraldehyde
Fastan
Methyl Acetate
Crotonic Acid
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51 Madison Avenue, New York
Chicago *Los Angeles*

Prices

	Current Market	1933 Low	1933 High	1932 Low	1932 High
Crotonaldehyde, 50 gal dr....lb.	.32	.36	.32	.36	.32	.36
Cudbear, English.....lb.	.19	.25	.16	.25	.16	.17
Cutch, Rangoon, 100 lb bales..lb.....		.02¾	.02½	.03	.08¾	.12
Borneo, Solid, 100 lb bale...lb.....		.04½	.02½	.04½	.03	.07
Cyanamide, bags c-l frt allowed Ammonia unit.....		1.02½	.97½	1.02½		97½
Dextrin, corn, 140 lb bags.100 lb.	3.64	3.84	2.89	3.84	2.99	3.67
British Gum, bags .....100 lb.	3.89	....	3.89	....	....	....
White, 140 lb bags.....100 lb	3.59	3.79	2.94	3.79	2.94	3.37
Potato Yellow, 220 lb bgs..lb.	.07¾	.08¾	.07¾	.09	.08	.09
White, 220 lb bags lc-l....lb.	.08	.09	.08	.09	.08	.09
Tapioca, 200 lb bags lc-l...lb.	.06¾	.07¾	.06¾	.08	.07	.08¾
Diamylether, wks., drums....lb.....		.60	....	....	....	....
Diamylphthalate, drs wks...gal.....		.20½	....	....	....	....
Dianisidine, barrels.....lb.	2.35	2.70	2.35	2.70	2.25	2.70
Dibutylphthalate, wks.....lb.	.20½	.21	.20½	.22	.218	.23½
Dibutyltartrate, 50 gal drs...lb.	.29½	.31½	.29½	.21	.29½	.31½
Dichloroethylether, 50 gal drs lb.....		.16	....	.16	.....	.16
Dichloromethane, drs wks....lb.	.55	.65	.55	.65	.55	.65
Diethylamine, 400 lb drs.....lb.	2.75	3.00	2.75	3.00	2.75	3.00
Diethylcarbonate, com. drs..gal.....		.31¾	....	....	.....	.....
Diethylaniline, 850 lb drs....lb.	.52	.55	.52	.55	.55	.60
Diethyleneglycol, drs.....lb.	.14	.16	.14	.16	.14	.16
Mono ethyl ether, drs...lb.	.15	.16	.15	.16	.15	.16
Mono butyl ether, drs...lb.....		.26	....	.26	.24	.30
Diethylene oxide, 50 gal drs..lb.	.26	.27	.26	.27	.....	.....
Diethylorthotoluidin, drs.....lb.	.64	.67	.64	.67	.64	.67
Diethyl phthalate, 1000 lb. drums.....lb.....		.20	.20	.26	.23	.26
Diethylsulfate, technical, 50 gal drums.....lb. ...		...	....	....	.30	.35
Digtycol Oleate, bbls.....lb.....		.16	....	....	.....	.....
Dimethylamine, 400 lb drs, pure 25 & 40% sol. 100% basis.lb.....		1.20	....	....	.....	.....
Dimethylaniline, 340 lb drs...lb.	.26	.28	.25	.28	.25	.27
Dimethyl phthalate drs.....lb.....		.24½	....	....	.....	.....
Dimethylsulfate, 100 lb drs...lb.	.45	.50	.45	.50	.45	.50
Dinitrobenzene, 400 lb bbls...lb.....		.18	....	.18	.15	.16
Dintrochlorobenzene, 400 lb bbls.....lb.	.13	.15	.13	.15	.13	.15
Dinitronaphthalene, 350 lb bbls .....lb.	.34	.37	.34	.37	34	.37
Dinitrophenol, 350 lb bbls....lb.	.23	.24	.23	.24	.23	.24
Dinitrotoluene, 300 lb bbls....lb.	.15	.16	.15	.17	.16	.17
Dioxan (See Diethylene Oxide).....		.....	....	....	.....	.....
Diphenyl.....lb.	.15	.25	.15	.40	.20	.40
Diphenylamine.....lb.	.31	.34	.31	.34	.34	.37
Diphenylguanidine, 100 lb bbl lb.	.33	.35	.30	.35	.30	.35
Dip Oil, 25%, drums.....lb.	.23	.25	.23	.25	.26	.30
Divi Divi pods, bgs shipmt..ton	30.00	32.00	26.00	32.00	26.00	30.00
Extract.....lb.	.05	.05½	.05	.05½	.05	.05½
Egg Yolk, 200 lb cases .....lb.	.42	.43	.40	.43	.40	.52
Epsom Salt, tech, 300 lb bbls c-1 NY... .....100 lb.....		2.20	....	2.20	1.70	1.90
Ether, USP anaesthesia 55 lb. drs. .....lb.	.22	.23	.22	.23	.22	.23
(Conc).....lb.	.09	.10	.09	.10	.09	.10
Isopropyl 50 gal. drums ...lb.	.07‡x	.08	.07	.08	.....	.....
Synthetic, wks, drums.....lb.	.08	.09	....	....	.....	.....
Ethyl Acetate, 85% Ester tanks.....lb.	.07½	.08	.07½	.09	.08½	.09
drums.....lb.	.08½	.09	.08½	.10	.09½	.10
Anhydrous, tanks.....lb.	.09	.10	.09	.10	.....	.10
drums.....lb.	.10	.10¼	.10	.10¼	.....	.10¼
Acetoacetate, 50 gal drs....lb.	.65	.68	.65	.68	.65	.68
Benzylaniline, 300 lb drs...lb.	.88	.90	.88	.90	.88	.90
Bromide, tech, drums.....lb.	.50	.55	.50	.55	.50	.55
Carbonate, 90%, 50 gal drs gal.	1.85	1.90	1.85	1.90	1.85	1.90
Chloride, 200 lb drums.....lb.....		.22	....	.22	.....	.22
Chlorocarbonate, cbys.....lb.....		.30	....	.30	.....	.30
Ether, Absolute, 50 gal drs..lb.	.50	.52	.50	.52	.50	.52
Furoate, 1 lb tins.....lb.....		1.00	1.00	5.00	.....	5.00
Lactate, drums works ...lb.	.25	.29	.25	.29	.25	.29
Methyl Ketone, 50 gal drs..lb.....		.12½	....	.12½	.....	.30
Oxalate, drums works.....lb.	.37½	.55	.37½	.55	.37½	.55
Oxybutyrate, 50 gal drs wks lb.	.30	.30½	.30	.30½	.....	.30½
Ethylene Dibromide, 60 lb dr..lb.	.65	.70	.65	.70	.65	.70
Chlorhydrin, 40%, 10 gal cbys. chloro, cont.....lb.	.75	.85	.75	.85	.7	.85
Dichloride, 50 gal drums....lb.	.06	.09	.05	.09	.0595	.07
Glycol, 50 gal drs wks.....lb.	.26	.28	.25	.28	.25	.28
Mono Butyl Ether drs wks.....		.20	....	.20	.20	.24
Mono Ethyl Ether drs wks	.15	.17	.15	.17	.15	.20
Mono Ethyl Ether Acetate dr. wks.....lb.	.16½	.18	.16½	.18	.16½	.23
Mono Methyl Ether, drs..lb.	.21	.23	.21	.23	.21	.23
Stearate.....lb.	.18	.18	.18	.18	.18	.18
Oxide, cyl.....lb.....		.75	....	.75	.75	2.00
Ethylidenaniline.....lb.	.45	.47½	.45	.47½	.45	.47½
Feldspar, bulk pottery .....ton	15.50	16.50	14.00	16.50	15.00	20.00
Powdered, bulk works....ton	13.50	14.50	13.50	14.50	15.00	21.00
Ferric Chloride, tech, crystal 475 lb bbls.....lb.	.05	.07½	.04½	07½	.04½	.07½
Fish Scrap, dried, wks.....unit.....		2.75*	1.85	2.75*	1.60	3.00
Acid, Bulk 7 & 3½% delivered Norfolk & Balt. basis...unit.....		2.50†	1.85	2.50†	1.40	2.40
Fluorspar, 98% bags.....28.00		35.50	28.00	35.50	28.00	46.00

*& 10; †& 50 xTanks 2c lower.

Formaldehyde

Formaldehyde, aniline, 100 lb..... drums.....lb.	.37½	.42	.37½	.42	.37½	.42
USP, 400 lb bbls wks.....lb.	.06	.07	.06	.07	.06	.07½
Fossil Flour.....lb.	.02½	.04	.02½	.04	.02½	.04
Fullers Earth, bulk, mines...ton	15.00	20.00	15.00	20.00	15.00	20.00
Imp. powd c-l bags.....ton	24.00	30.00	24.00	30.00	24.00	30.00
Furfural (tech.) drums wks,..lb.	.10§	.15	10	.15	.....	.10
Furfuramide (tech) 100 lb dr..lb.....		.30	....	.30	.....	.30
Furfuryl Acetate, 1 lb tins....lb.....		5.00	....	5.00	.....	5.00
Fusel Oil, 10% impurities....lb.	.16	.18	.14½	.18	.....	.....

‡Higher price, refined. §Tanks, 1c lower

	Current Market	1933 Low	1933 High	1932 Low	1932 High
Fustic, chips, lb.	.04	.04	.05	.04	.05
Crystals, 100 lb boxes, lb.	.18	.18	.20	.18	.20
Liquid 50°, 600 lb bbls, lb.		.07	.08	.07	.08
Solid, 50 lb boxes, lb.	.14	.14	.16	.14	.16
Sticks, ton	25.00	25.00	26.00	25.00	26.00
G Salt paste, 360 lb bbls, lb.	.42	.42	.43	.42	50
Gall Extract, lb.	.18	.18	.20	.18	.20
Gambier, common 200 lb cs, lb.	.03¾	.03	.07	.06½	.07
Singapore cubes, 150 lb bg, lb.	.05¾	.05¼	.08	.07¾	.09
Gelatin, tech, 100 lb cases, lb.	.45	.45	.50	.45	.50
Glauber's Salt, tech, c-l wks, 100 lb.	1.00	1.00	1.70	1.00	1.70
Glucose (grape sugar) dry 70-80° bags c-l NY, 100 lb.	3.24	3.24	3.34	3.24	3.34
Tanner's Special, 100 lb bags 100 lb.		2.33		2.33	2.36 2.75
Glue, medium white, bbls, lb.	.17	.12	.20	.15½	.20
Pure white, bbls, lb.	.21	.18	.26	.18	.27
Glycerin, CP, 550 lb drs, lb.		.10½		.10½	.09¾ .11½
Dynamite, 100 lb drs, lb.		.09	.07½	.09	.07¼ .09¾
Saponification, tanks, lb.	.06¼	.06¼	.05	.06¼	.04¼ .06¼
Soap Lye, tanks, lb.	.05¼	.06	.04	.06	.03¾ .05
Glyceryl Stearate, bbls, lb.		.18	.17	.18	.17
Graphite, crude, 220 lb bgs, ton	12.00	12.00	23.00	12.00	35.00
Flake, 500 lb bbls, lb.	.05	.05	.06	.05	.09
Gums					
Gum Accroides, Red, coarse and fine 140-150 lb bags, lb.	.03¾	.03¾	.04½	.03¾	.04½
Powd, 150 lb bags, lb.	.06	.06	.06½	.06	.06½
Yellow, 150-200 lb bags, lb.	.18	.18	.20	.18	.20
Aloes, Barbadoes, lb.	.85	.85	.90		
Animi (Zanzibar) bean & pea 250 lb cases, lb.	.35	.35	.40	.35	.40
Glassy, 250 lb cases, lb.	.50	.50	.55	.50	55
Arabic, amber sorts, lb	.07½	.05¾	.08		
Asphaltum, Barbadoes (Manjak) 200 lb bags, lb.	.03	.03	.05	.04	.06
Egyptian, 200 lb cases, lb.	.13	.13	.15	.13	.17
Ester, light, lb.		.06			
Dark, lb.		.05¾			
Gamboge, pipe, cases, lb.		.55	.42	.55	
Powdered, bbls, lb.	.60	.65	.50	.65	
Gilsonite Selects, 200 lb bags, ton	30.50	30.50	32.90	30.50	32.90
Damar Batavia standard 136, lb. cases, lb.	.14	.15	.08½	.15½	08½ .09
Batavia Dust, 160 lb bags, lb.	.07	.07½	.04	.07½	.04 .05½
E Seeds, 136 lb cases, lb.	.08½	.09	.05½	.09½	.05½ .06½
F Splinters, 136 lb cases and bags, lb.	.05½	.06	.05½	.06	.05½ .06
Singapore, No. 1, 224 lb cases, lb.	.15	.15½	.09½	.17½	.10½ 11
No. 2, 224 lb cases, lb	.09	.09½	.07	.11½	.06 .07½
No. 3, 180 lb bags, lb.	.05½	.06	.04½	.06½	.04½ .05
Benzoin Sumatra, U. S. P. 120 lb. cases, lb.	.19½	.20	.17	.23	.18 .22
Copal Congo, 112 lb bags, clean opaque, lb.	.24	.24½	.16½	.24½	.16½ .17
Dark, amber, lb.	.08	.09	.06	.09	.06 .07
Light, amber, lb.	.12	.17	.08	.17	.08 .09
Water, white, lb.	.45	.48	.37	.48	.37 .45
Kino, tins, lb.	.75	.80			
Mastic, lb.	.30	.34½	.26¾	.34½	.26¾ .40
Manila 180-190 lb baskets Loba A, lb.	.10½	.11½	.09	.11½	.09 .11
Loba B, lb.	.10	.11	.08	.11	.08 .08½
Loba C, lb.	.10½	.11	.07	.11	.07 .08
M A Sorts, lb.	.06	.06½	.05	.06½	.04¾ .05
D B B Chips, lb.	.07¾	.08¼	.05¾	.08¼	.05 .06¼
East Indies chips, 180 lb bags, lb.	.05	.06	.04	.06	.04½ 05½
Pale bold, 224 lb cs, lb.	16	17	.05½	17	.06 .08
Pale nubs, 180 lb bags, lb.	10	13	.05	13	.03½ .05
Pontianak, 224 lb cases, Bold gen No. 1, lb.	.17	.18	.14	.18	.14 .16
Gen. chips spot, lb.	.06	.06½	.05	.07	.05 .08
Elemi, No. 1, 80-85 lb cs, lb.	.10	.11	.09	.11	.09 .09½
No. 2, 80-85 lb cases, lb.	.09½	.10½	.08½	.10½	.08½ .09
No. 3, 80-85 lb cases, lb.	.08	.08½	.08	.08½	.08 .08½
Ghatti, sol. bags, lb.	.08½	.09½	.06	.09½	
Karaya, pow. bbls xxx, lb.	.23	.25			
xx, lb.	.15	16			
No. 1, lb.	.10	11			
No. 2, lb.	.08	.09			
Kauri, 224-226 lb cases No. 1, lb.	.20	.25	.20	.25	.20 .42
No. 2 fair pale, lb.	.12½	.16	.12¼	.16	.12½ .30
Brown Chips, 224-226 lb. cases, lb.	.06½	.08½	.06½	.12	.10 .12
Bush Chips, 224-226 lb. cases, lb.	.22	.24	.22	.24	.22 .24
Pale Chips, 224-226 lb cases, lb.	.11	.14	.11	.14	.11 .14
Sandarac, prime quality, 200 lb. bags & 300 lb. casks, lb.		35	.21	.26½	.23 .25½
Senegal, picked bags, lb.	.15	.16			
Sorts, lb.		08			
Thus, bbls, 280 lbs.		8.25			
Strained, 280 lbs.		8.25			
Tragacanth, No. 1 bags, lb.		1.00	.65	1.00	
Yacca, bags, lb.		04			
Helium, 1 lit. bot, lit.		25.00		25.00	25.00
Hematine crystals, 400 lb bbls lb.	.16	.18	.10	.18	.10 .18
Paste, 500 bbls, lb.		.11		.11	.11
Hemlock 25%, 600 lb bbls wks lb.	.03½	.04½	.03½	.04½	.03 .04½
Bark, ton		16.00		16.00	16.00
Hexalene, 50 gal drs wks, lb.		.30		.30	.30 .40
Hexane, normal 60-70° C. Group 3, tanks, gal.		.11			
Hexamethylenetetramine, drs lb.	.46	.47	.46	.47	.46 .47
Hoof Meal, f.o.b. Chicago, unit	1.40	1.60	.75	1.75	.75 1.35
South Amer. to arrive, unit	1.40	1.50	1.40	1.50	1.25 1.65
Hydrogen Peroxide, 100 vol, 140 lb cbys, lb.	.20	.21	.20	.21	.20 .21

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  - Pentachlorethane
  - Hexachlorethane
  - Methylene Chloride
  - Chloroform
  - Carbon Tetrachloride
- ARTIC* (Methyl Chloride)
- Peroxides
  - ALBONE*C (Hydrogen Peroxide, 100 Vol.)
  - SOLOZONE* (Sodium Peroxide)
  - Sodium Perborate
- P.A.C.* Formaldehyde
- Sodium
- CYANEGG* (Sodium Cyanide 96-98 %)
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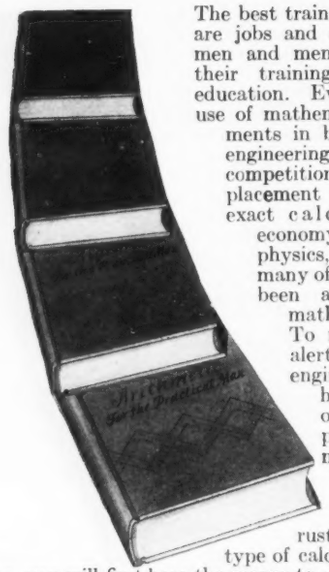

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Hydroxyamine
Myrobalans

Prices

	Current Market	1933 Low	1933 High	1932 Low	1932 High
Hydroxyamine Hydrochloride lb.....	**3.15**	....	3.15	.....	3.15
Hypernic, 51°, 600 lb bbls....lb.	.15	.19	.11	.19	.11	.12
Indigo Madras, bbls.....lb.	1.25	1.30	1.25	1.30	1.25	1.30
20% paste, drums.....lb.	.15	.18	.15	.18	.15	.18
Synthetic, liquid.....lb.....		.12	....	.12	.....	.12
Iodine, crude.....per kilo.....		£1 5s†	....	....	.....	.....
Resublimed, kegs.....lb.	3.35	3.40	2.65	3.40	.....	.....
Irish Moss, ord. bales.....lb.	.06	.07	....	....	.....	.....
Bleached, prime, bales.....lb.	.08	.12	....	....	.....	.....
Iron Chloride see Ferric or Ferrous						
Nitrate, kegs.....lb.	.09	.10	.09	.10	.09	10
Coml, bbls.....100 lb.	2.75	3.25	2.50	3.25	2.50	3.25
Oxide, English.....lb.	.04½	.07	.04	.07	.04	.10
Japan Wax, 224 lb cases.....lb.	.07	.07½	.05½	.08	.06	.09
Kieselguhr, 95 lb bgs NY.....						
Brown.....ton	60.00	70.00	60.00	70.00	60.00	70 00
Lead Acetate, bbls wks...100 lb.....		9.50	8.50	9.50	9.00	10.00
White crystals, 500 lb bbls wks.....100 lb.....		10.50	9.50	10.50	10.00	11.00
Arsenate, drs 1c-1 wks.....lb.	.10	.10½	.09	.10½	09½	.13
Dithiofuroate, 100 lb dr....lb.....		1.00	....	1.00	....	1.00
Linoleate, solid bbls.....lb.	.26	.26½	....	....	.....	.....
Metal, c-l NY.....100 lb.....		4.50	3.00	4.50	2.70	3.75
Nitrate, 500 lb bbls wks....lb.	.10	.14	.10	.14	.10½	.14
Oleate, bbls.....lb.	.15	.16	.15	.16	.15	.18
Lead Oxide Litharge, 500 lb. bbls.....lb.....		.06	.05½	.06	.05½	.07
Red, 500 lb bbls wks....lb.....		.08	.06½	.08	.06½	.07
Resinate, precip., bbls...lb.	.18	.18½	....	....	.....	.....
Stearate, bbls.....lb.	.22	.23	....	....	.....	.....
White, 500 lb bbls wks...lb.	.06½	.07	.06	.07	.06	.07
Sulfate, 500 lb bbls wk...lb.....		.06	.05½	.06	.05½	.06
Leuna saltpetre, bags c.i.f.....ton.....		Nom.	....	Nom	.....	Nom.
S. points c.i.f.....ton.....		Nom.	....	Nom.	.....	Nom.
Lime, ground stone bags.....ton.....		4.50	....	4.50	.....	4.50
Live, 325 lb bbls wks....bbl.....		1.70	....	....	.....	.....
Lime Salts, see Calcium Salts						
Lime-Sulfur soln bbls.....gal.	.15	.17	.15	.17	.15	.17
Linseed cake, bulk.....ton.....		25.50	17.50	27.50	.....	.....
Linseed Meal.....ton.....		35.00	28.00	35.70	.....	.....
Lithopone, 400 lb bbls 1c-1 wks .....lb.	.04½	.05	.04½	.05	.04½	.05
Logwood, 51°, 600 lb bbls....lb.	.08½	.12½	.05	.12½	.05	.08
Solid, 50 lb boxes.....lb	.13½	.17½	.08	.17½	.08	.12½
Sticks.....ton	24.00	26.00	24.00	26.00	24.00	26.00
Madder, Dutch.....lb.	.22	.25	.22	.25	.22	.25
Magnesite, calc, 500 lb bbl...ton	53.00	60.00	46.00	60.00	50.00	60.00
Magnesium Carb, tech, 70 lb. bags NY.....lb.	.05¾	.06½	.05¾	.06½	.05¾	.06½
Chloride flake, 375 lb. drs c-l wks.....ton	34.00	36.00	34.00	36.00	35.00	36.00
Imported shipment.....ton	31.75	33.00	31.75	33.00	31.75	33.00
Fused, imp., 900 lb bbls NY ton.....		31.00	....	31.00	.....	31.00
Fluosilicate, crys, 400 lb bbls wks.....lb.	.10	10½	.10	.10½	.10	.10½
Oxide, USP, light, 100 lb bbls .....lb.....		.42	....	.42	.....	.42
Heavy, 250 lb bbls.....lb.....		.50	....	.50	.....	.50
Palmitate, bbls.....lb.	.20	.21	....	....	.....	.....
Peroxide, 100 lb cs.....lb.	1.20	1.25	1.00	1.25	1.00	1.25
Silicofluoride, bbls.....lb.	.10	.11	.08½	.11	.09½	.10½
Stearate, bbls.....lb.	.18	.19	.16½	.20	.16½	.26
Manganese Borate, 30%, 200 lb bbls.....lb.	.15	.16	.15	.16	.15	.19
Chloride, 600 lb casks.....lb.	.07	.08	.07	.08	.07	.08½
Dioxide, tech (peroxide) drs lb.	.03¾	.06	.03½	.06	.03½	.06
Linoleate, lig. drums.....lb.	.18	.19	....	....	.....	.....
Resinate, fused, bbls.....lb.	.08½	.08½	....	....	.....	.....
precip., bbls.....lb.	.11½	.12½	....	....	.....	.....
Sulfate, 550 lb drs NY.....lb.....		.08	.07	.08	.07	.08
Mangrove 55%, 400 lb bbls...lb.....		.04	....	.04	.....	.04
Bark, African.....ton	28.00	30.00	22.00	30.00	21.00	25.00
Marble Flour, bulk.....ton	12.00	13.00	12.00	13.00	12.00	15.00
Mercurous chloride.....lb.....		.77	.67	.77	.67	.93
Mercury metal.....76 lb flask	63.00	65.00	48.00	65.00	47.00	74.50
Meta-nitro-aniline.....lb.	.67	.69	.67	.69	.67	.69
Meta-nitro-para-toluidine 200 lb. bbls.....lb.	1.40	1.55	1.40	1.55	1.40	1.55
Meta-phenylene-diamine 300 lb. bbls.....lb.	.80	.84	.80	.84	.80	.84
Meta-toluene-diamine, 300 lb. bbls.....lb.	.67	.69	.67	.69	.67	.69
Methanol, (Wood Alcohol).....						
*Crude, tanks.....gal.....		.20	.20	.20	.....	.....
95% tanks.....gal.	.33	.35	.33	.35	.33	.35
97% tanks.....gal.	.34	.39	.34	.39	.34	.39
*Pure, Synthetic drums cars gal.....		.39½	.37½	.39½	.37½	.41½
*Synthetic tanks.....gal.....		.35½	....	.35½	.....	.35½
*Denat. grade, tanks.....gal.....		.40	.35	.40	.....	.....
Methyl Acetate drums 82% gal.	.12	.13	.12	.13	.12	.17½
99%.....gal.....		.15	....	.15	.....	.15
Acetone, drums.....gal.	.54	.56	.42	.56	.47	.55
Hexyl Ketone, pure.....lb.....		1.20	....	1.20	.....	1.20
Anthraquinone.....lb.	.65	.67	.65	.67	.65	.95
Cellosolve, (See Ethylene Glycol Mono Methyl Ether).....		.....	....	....	.....	.....
Chloride, 90 lb cyl.....lb.	.45	.45	.45	.45	45	.45
Mica, dry grd. bags wks.....lb.	65.00	80.00	65.00	80.00	65.00	80.00
Michler's Ketone, kegs.....lb.....		2.50	2.50	3.00	.....	3 00
Molasses, blackstrap, tanks f.o.b. N. Y.....gal.....		.05	.05	.05	.....	.....
Monochlorobenzene, drums see, Chlorobenzene, mono .....lb.						
Monomethylparaminosulfate 100 lb drums .....lb.	3.75	4.00	3.75	4.00	3.75	4.00
Montan Wax, crude, bags....lb.	.08	.08½	.03¾	.08½	.03¾	.07
Myrobalans 25%, liq bbls....lb.	.03¾	.04½	.03¾	.04½	.03¾	.04½
50% Solid, 50 lb boxes.....lb.	.05	.05½	.05	.05½	.05	.05½

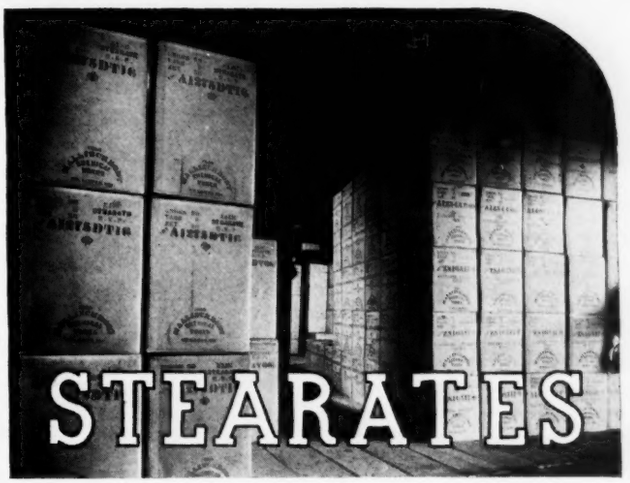
*delivered basis (east of Miss. River) †As of Sept. 1, $2.56

Current

Myrobalans
Phenyl-Alpha-Naphthylamine

	Current Market	1933 Low	1933 High	1932 Low	1932 High
J1 bags ton	31.50	27.00	35.00	34.00	35.00
J2 bags ton	21.50	15.50	22.75	15.25	18.50
R2 bags ton	21.00	15.00	22.00	14.75	17.50
Naphtha. v.m.& p. (deodorized)					
tanks, Group 3 tanks gal.	.05¼	.05½	....	....	.....	.....
Bayonne, tanks lb.	.....	.09½	.08½	.09½	.08½	.10
Naphthalene balls, 250 lb bbls						
wks lb.	.05½	.06½	.05½	.06½	.03¾	05½
Crude, imp. 100 lb.	1.75	1.85	1.75	1.85	.....	.....
Crushed, chipped bgs wks lb.	.....	.04½	....	.04½	.....	.04½
Flakes, 175 lb bbls wks lb.	.....	.04½	....	.04½	.03¾	.04¾
Nickel Chloride, bbls lb.	.17	.18	.17	.18	.18	.20
Oxide, 100 lb kegs NY lb.	.35	.37	.35	.37	.35	.40
Salt bbl. 400 bbls lb NY lb.	.12	.13	.11	.13	.10½	.13
Single, 400 lb bbls NY lb.	.12	.12	.11	.12	.10½	.12
Metal ingot lb.	.35	.35	.35	.35	.35	.35
Nicotine, free 40%, 8 lb tins, cases	8.25	10.15	....	....	.....	.....
Sulfate, 55 lb. drums lb.	.67	.75	.67	.75	.74½	.....
Nitre Cake, bulk ton	12.00	14.00	10.00	14.00	10.00	12.00
Nitrobenzene, redistilled, 1000 lb drs wks lb.	.09*	.09½	.09	.09½	.09	.09½
Nitrocellulose, c-l-l-cl, wks lb.	.27	.33	.27	.33	.25	.36
Nitrogenous Material, bulk unit	2.75	3.00	1.50	3.50	1.35	1.55
Nitronaphthalene, 550 lb bbls lb.	.24	.25	.24	.25	....	25
Nitrotoluene, 1000 lb drs wks lb.	.17	.18	.14	.18	.14	.15
Nutgalls Aleppy, bags lb.	.....	.18	....	.18	.....	.18
Chinese, bags lb.	.17	.18	.17	.18	.17	.18
Oak Bark, ground ton	30.00	35.00	30.00	35.00	30.00	35.00
Whole ton	20.00	23.00	20.00	23.00	20.00	23.00
Extract, 25% tannin, bbls. lb.	.03¾	.03½	....	....	.....	.....
Orange-Mineral, 1100 lb casks NY lb.	.....	.10½	.09½	.10½	09½	.10½
Orthoaminophenol, 50 lb kgs lb.	2.15	2.25	2.15	2.25	2.15	2.25
Orthoanisidine, 100 lb drs lb.	1.00	1.15	1.00	1.15	1.15	1.50
Orthochlorophenol, drums lb.	.50	.65	.50	.65	.50	.65
Orthocresol, drums lb.	.13	.15	.13	.15	.13	.22
Orthodichlorobenzene, 1000 lb. drums lb.	.05½	.06	05½	.06	.07	.10
Orthonitrochlorobenzene, 1200 lb drs wks lb.	.28	.29	.28	.29	28	29
Orthonitrotoluene, 1000 lb drs wk lb.	.05½	.06	.05½	.06	.14	.18
Orthonitrophenol, 350 lb dr. lb.	.52	.80	.52	.90	.85	.90
Orthotoluidine, 350 lb bbl 1c-1 lb.	.14½	.20	.14½	.22	.20	22
Orthonitroparachlorphenol, tins lb.	.70	.75	.70	.75	.70	.75
Osage Orange, crystals lb.	.16	.17	.16	.17	.16	.17
51 deg. liquid lb.	.07	.07¾	.06	.07¾	.06	.07½
Powdered, 100 lb bags lb.	.14½	.15	.14½	.15	14½	.15
Paraffin, refd, 200 lb cs slabs 123-127 deg. M. P. lb.	.032	.034	.02	.034	.02½	.03
128-132 deg. M. P. lb.	.03½	.03⅜	.03½	.03⅜	.....	.03½
133-137 deg. M. P. lb.	.043	.04½	.043	.04½	.04	.04¾
Para Aldehyde, 110-55 gal drs. lb.	.20½	.23	.20½	.23	.20½	.23
Aminoacetanilid, 100 lb bg. lb.	.52	.60	.52	.60	.52	.60
Aminohydrochloride, 100 lb. kegs lb.	1.25	1.30	1.25	1.30	1.25	1.30
Aminophenol, 100 lb kegs lb.	.78	.80	.78	.80	.78	.80
Chlorophenol, drums lb.	.50	.65	.50	.65	.50	.65
Coumarone, 330 lb drums lb.	.....	.....	.....	.....	.....	.....
Cymene, refd, 110 gal dr. gal.	2.25	2.50	2.25	2.50	2.25	2.50
Dichlorobenzene, 150 lb bbls wks lb.	.15	.16	.15	.16	.15½	.16
Nitroacetanilid, 300 lb bbls lb.	.45	.52	.45	.52	.45	.52
Nitroaniline, 300 lb bbls wks lb.	.48	.55	.48	.55	.48	.55
Nitrochlorobenzene, 1200 lb drs wks lb.	.23½	.24	.23½	.26	.23	.26
Nitro-orthotoluidine, 300 lb. bbls lb.	2.75	2.85	2.75	2.85	2.75	2.85
Nitrophenol 185 lb bbls lb.	.45	.50	.45	.50	.45	.50
Nitrosodimethylaniline, 120 lb. bbls lb.	.92	.94	.92	.94	.92	.94
Nitrotoluene, 350 lb bbls lb.	.29	.31	.29	.31	.29	.31
Phenylenediamine, 350 lb bbls lb.	1.25	1.30	1.15	1.30	1.15	1.20
Toluenesulfonamide, 175 lb bbls lb.	.70	.75	.70	.75	.70	.75
Toluenesulfonchloride, 410 lb bbls wks lb.	.20	.22	.20	.22	.20	.22
Toluidine, 350 lb bbls wk lb.	.....	.58	....	.58	.42	.43
Paris Green, Arsenic Basis 100 lb kegs lb.	.....	.24	....	.24	.24	.27
250 lb kegs lb.	.....	.23	....	.23	.23	.25
Persian Berry Ext., bbls lb.	.25	Nom	.25	Nom	.25	Nom.
Pentane, normal, 28-38° C, group 3, tanks gal.	.....	.07	....	....	.....	.....
Pentasol (see Alcohol, Amyl)						
Pentasol Acetate (see Amyl Acetate)						
Petrolatum, Green, 300l b bbl. lb.	.01⅞	.02	.01⅞	.02	.02	.02½
Petroleum Ethers, tanks 30-60°, Group 3 gal.	.....	.10	....	.10	.....	.....
Petroleum solvents and diluents						
Cleaners' naphtha, Group 3, tanks gal.	.05½	.06	.05	.07	.....	.....
Lacquer diluents, Bayonne tanks gal.	.12½	.12¾	.12	.12¼	.....	.....
Group 3, tanks gal.	.06½	.06¼	.06¼	.08	.....	.....
Petroleum thinner 47-49 deg. tanks, Group 3 gal.	.04¼	.05	....	....	.....	.....
Rubber solvent, stand. grade tanks, Group 3 gal.	.05½	.05¾	.05	.06	.....	.....
East Coast tanks gal.	.....	.09½	.09	.09½	.....	.....
Stoddard solvents 48-50 deg. tanks, Group 3 gal.	.05	.05½	.04½	.05¾	.....	.....
East Coast tanks gal.	.....	.09½	.09	.09½	.....	.....
Phenol, 250-100 lb drums lb.	.14½	.15	.14½	.15	.14½	.15
Phenyl-Alpha-Naphthylamine, 100 lb kegs lb.	.....	1.35	....	1.35	.....	1.35

*tanks 1c less.



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Phenyl Chloride
Rosin

Prices

	Current Market	1933 Low	1933 High	1932 Low	1932 High
Phenyl Chloride, drums.....lb.....	.16	....	....	.....	.....
Phenylhydrazine Hydrochloride .....lb.	2.90	3.00	2.90	3.00	2.90	3.00
Phosphate Acid (see Superphosphate)					
Phosphate Rock, f.o.b. mines					
Florida Pebble, 68% basis..ton	2.75	3.20	2.75	3.25	3.10	3.25
70% basis.....ton	3.25	3.70	3.25	3.90	3.75	3.90
72% basis.....ton	3.75	4.20	3.75	4.35	4.25	4.35
75-74% basis.....ton	4.75	5.30	4.75	5.50	5.25	5.50
75% basis.....ton	4.85	5.40	4.85	5.75	.....	5.75
77-80% basis.....ton	5.75	6.30	5.75	6.30	.....	6.25
Tennessee, 72% basis.....ton.....		5.00	....	5.00	.....	5.00
Phosphorous Oxychloride 175 lb cyl.....lb.	.16	.20	.16	.23	.18	.20
Red, 110 lb cases.....lb.....		.45	.40	.45	.40	.46
Yellow, 110 lb cases wks.lb.	.28	.33	.27½	.33	.27½	.37½
Sesquisulfide, 100 lb cs.....lb.	.38	.44	.38	.44	.38	.44
Trichloride, cylinders.....lb.	.16	.20	.16	.23	.18	.20
Phthalic Anhydride, 100 lb bbls wks.....lb.	.15	.16	.15	.16	.15	.16
Pigments Metallic, Red or brown bags, bbls, Pa. wks.....ton	37.00	45.00	37.00	45.00	37.00	45.00
Pine Oil, 55 gal drums or bbls						
Destructive dist.....lb.	.59	.62	.59	.62	.59	.63
Prime bbls.....bbl.	8.00	10.60	8.00	10.60	8.00	10.60
Steam dist. bbls.....gal.....		.59	.52	.59	.54	.61
Pitch Hardwood..... wks.....ton.....		20.00	20.00	25.00	20.00	35.00
Plaster Paris, tech, 250 lb bbls .....bbl.	3.40	3.50	3.30	3.50	3.30	3.50
Platinum, Refined.....oz.	24.00	26.00	24.00	26.00	32.00	38.00
Pontol, tanks.....per gal.....		.54	....	.54	.54	.54
Potash, Caustic, wks, solid...lb.	.07½	07⅝	.06½	.07⅝	.06½	.06½
flake.....lb.	.0803	.08½	.0705	.08½	.0705	.08
Liquid, tanks.....lb.....		.03⅝	....	....	.....	.....
Potash Salts, Rough Kainit						
12.4% basis bulk.....ton.....		9.20	....	9.20	.....	9.20
14% basis.....ton.....		9.70	....	9.70	.....	9.70
Manure Salts.....						
20% basis bulk.....ton.....		12.00	....	12.00	12.00	12.65
30% basis bulk.....ton.....		19.15	....	19.15	.....	19.15
Potassium Acetate.....lb.	.27	.28	.27	.28	.27	.28
Potassium Muriate, 80% basis bags.....ton.....		37.15	....	37.15	.....	37.15
Pot. & Mag. Sulfate, 48% basis bags.....ton.....		25.00	25.00	27.80	.....	27.80
Potassium Sulfate, 90% basis bags.....ton.....		42.15	42.15	47.50	47.50	48.25
Potassium Bicarbonate, USP, 320 lb bbls.....lb.	.07½	.09	.07½	.09	.07½	.09
Bichromate Crystals, 725 lb casks.....lb.	.07½	.08¼	.07½	.08¼	.07	.08½
Binoxalate, 300 lb bbls.....lb.	.14	.17	.14	.17	.14	.17
Bisulfate, 100 lb kegs.....lb.	.16	.30	.16	.30	.16	.30
Carbonate, 80-85% calc. 800 lb casks.....lb.....		.06¾	.04¼	.06¼	.0475	.05
Chlorate crystals, powder 112 lb keg wks.....lb.	.08½	.09	.08	.09	.08	.08½
Chloride, crys bbls.....lb.	.04	.04½	.04	.04½	.04	.04½
Chromate, kegs.....lb.	.23	.28	.23	.28	.23	.28
Cyanide, 110 lb. cases.....lb.	.55	60	.50	.60	.50	.57½
Iodide, 75 lb. bbls.....lb.....		2.70	2.35	2.70	.....	.....
Metabisulfite, 300 lb. bbl...lb.	.10½	.11	.10½	.11	.10½	.13
Oxalate, bbls.....lb.	.16	.24	.16	.24	.16	.24
Perchlorate, casks wks.....lb.	.09	.11	.09	.11	.09	.11
Permanganate, USP, crys 500 & 100 lb drs wks.....lb.	....	.17½	.16	.17½	.16	.16½
Prussiate, red, 112 lb keg...lb	.....	.35	.32½	.38½	.....	.38½
Yellow, 500 lb casks.....lb.	.16½	.17½	.16½	.17½	.16½	.21
Tartrate Neut, 100 lb keg...lb.....		.21	....	.21	.....	.21
Titanium Oxalate, 200 lb bbls .....lb.	.21	.23	.21	.23	.21	.23
Propane, group 3, tanks.....		.07	....	.07	.....	.....
Pumice Stone, lump bags.....lb.	.04	.05	.04	.05	.04	.05
250 lb bbls.....lb	.04½	.06	.04½	.06	.04½	.06
Powdered, 350 lb bags.....lb.	.02½	.03	.02½	.03	.02½	.03
Putty, commercial, tubs..100 lb.	2.00	2.25	2.00	2.25	2.00	2.45
Linseed Oil, kegs.....100 lb.	3.40	3.50	3.40	3.50	3.40	4.75
Pyridine, 50 gal drums ....gal.	.85	.95	.85	.95	.85	1.27
Pyrites, Spanish cif Atlantic ports bulk.....unit	.12	.13	.12	.13	.12	.13
Quebracho, 35% liquid tks...lb.	.02	.02⅜	.02	.02½	.02	.03
450 lb bbls c-l .....lb.	.02½	.02⅜	.02⅜	.02¼	.02½	.03½
Solid, 63%, 100 lb bales cif..lb		.03	.02⅜	.03	.02	.02⅜
Clarified, 64%, bales... lb.	.03¼	.03¼	.02⅜	.03¼	.02½	.03⅜
Quercitron, 51 deg liquid 450 lb bbls.....lb.	.05½	.06	.05½	.06	.05½	.06
Solid, 100 lb boxes.....lb.	.09½	.13	.09½	.13	09½	.13
Bark, Rough.....ton.....		14.00	....	14.00	....	14.00
Ground.....ton	34.00	35.00	34.00	35.00	34.00	35.00
R Salt, 250 lb bbls wks.....lb.	.40	.44	.40	.44	40	.44
Red Sanders Wood, grd bbls. lb.....		.18	....	.18	.....	.18
Resorcinol Tech, cans.....lb.	.65	.70	.65	.70	65	.70
Rochelle Salt, cryst.....lb.	.12½	.12½	....	....	.....	.....
Rosin Oil, 50 gal bbls, first run .....gal.	.45	46	.42	.46	.41	.45
Second run.....gal	.50	.51	.46	.51	.45	51
Rosin						
Rosins 600 lb bbls 280 lb.....unit ex. yard N. Y						
B.....		5.00	2.75	5.15	2.95	3.65
D.....		5.00	2.95	5.15	3.15	3.75
E.....		5.00	3.55	5.15	3.37½	4.00
F.....		5.02½	3.85	5.17½	3.40	4.15
G.....		5.02½	3.90	5.17½	3.45	4.15
H.....		5.02½	4.00	5.17½	3.45	4.20
I.....		5.05	4.05	5.20	3.47½	4.25
K.....		5.05	4.60	5.20	3.60	4.65
M.....		5.07½	4.35	5.20	4.20	5.25
N.....		5.10	4.75	5.30	4.65	6.05

Current

Rosin
Starch, Potato

	Current Market	1933 Low	1933 High	1932 Low	1932 High
Rosin, WG	5.25	4.80	5.60	5.25	6.45
WW	5.45	4.85	6.20	5.85	6.65
Rotten Stone, bags mines....ton	23.50	24.00	23.50	24.00	20.00	23.00
Lump, imported, bbls.....lb.	.05	.07	.05	.07	.05	.07
Selected bbls.....lb.	.09	.12	.09	.12	.09	2
Powdered, bbls.....lb.	.02½	.05	.02	.05	.02	.05
Sago Flour, 150 lb bags.....lb.	.02½	.03	.02½	.03	.02½	.04
Sal Soda, bbls wks.....100 lb.	.90	1.00	.90	1.00	.90	1.00
Salt Cake, 94-96% c-1 wks...ton	13.00	18.00	13.00	18.00	13.00	15.50
Chrome.....ton	12.00	13.00	12.00	13.00	12.00	14.50
Saltpetre, double refd granular 450-500 lb bbls.....lb.	.05¾	.06	.05¾	.06¾	.06	.06¾
Satin, White, 500 lb bbls.....lb.		.01½	....	.01½	.....	.01½
Shellac Bone dry bbls.....lb.		.24	.18	.24	.16	.26
Garnet, bags.....lb.	.17	.18	.15	.20	.15	.20
Superfine, bags.....lb.	.16	.16¼	.09½	.18¾	.10	.14
T. N. bags.....lb.	.15	.15¾	.08½	.17¼	.09	.13
Schaeffer's Salt kegs.....lb.	.48	.50	.48	.50	.48	.50
Silica, Crude, bulk mines....ton	8.00	11.00	8.00	11.00	8.00	11.00
Refined, floated bags.....ton	22.00	30.00	22.00	30.00	22.00	30.00
Air floated bags.....ton		32.00	....	32.00	.. ..	32.00
Extra floated bags.....ton	30.00	35.00	30.00	35.00	30.00	40.00
Silver.....oz.		36¾	....	....	.....	.....
Silver Nitrate, vials.....oz.		26¼	....	....	.....	.....
Soapstone, Powdered, bags f.o.b. mines.....ton	15.00	22.00	15.00	22.00	15.00	22.00
Soda Ash, 58% dense, bags c-1 wks.....100 lb.		1.17½	....	1.17½	1.17½	.....
58% light, bags.....100 lb.	1.15	1.20	1.15	1.20	1.15	1.20
Soda Caustic, 76% grnd & flake drums.....100 lb.	2.90	3.00	2.90	3.00	2.90	3.00
76% solid drs.....100 lb.	2.50	2.55	2.50	2.55	2.50	2.55
Liquid sellers tanks, 100 bls.	2.15	2.20	2.15	2.20	.....	.....
Sodium Abietate, drs.....lb.		.03	....	.03	.....	.03
Acetate, tech 450 lb. bbls wks	lb. .04½	.05	.04½	.05	.04½	.05
Alignate, drs.....lb.		.50	....	.50	.....	.50
Arsenate, drums.....lb.	.07¾	.08¾	.07¾	.08¾	.....	.....
Arsenite, drums.....gal.	.50	.75	.05	.75	.50	.75
Benzoate U.S.P., kegs.....lb.	.40	.42	....	....	.....	.....
Bicarb, 400 lb bbl.....100 lb.		2.25	....	2.25	.....	2.25
Bichromate, 500 lb cks wks	lb. .05	.05½	.044	.05½	.044	.05¼
Bisulfite, 500 lb bbl wks....lb.	.03	.0335	.02¾	.0335	.03	.34
Chlorate, wks.....lb.	.05¾	.07¾	.05¼	.07¾	.05¾	.07¾
Chloride, technical.....ton	11.40	14.00	11.40	14.00	12.00	13.00
Cyanide, 96-98%, 100 & 250 lb drums wks.....lb.	.15½	.16	.15½	.16	.15½	.17
Fluoride, 300 lb bbls wks....lb.		.07½	.07	.07½	.07	.07½
Hydrosulfite, 200 lb bbls f.o.b. wks.....lb.	.20	.21	.20	.21	.21	.24
Hypochloride solution, 100 lb. cbys.....lb.		.05	....	.05	.....	.05
Hyposulfite, tech, pea cyrs 375 lb bbls wks.....100 lb.	2.40	3.00	2.40	3.00	2.40	3.00
Technical, regular crystals 375 lb bbls wks....100 lb.	2.40	2.65	2.40	2.65	2.40	2.65
Iodide.....lb.		3.50	3.10	3.50	.....	.....
Metanilate, 150 lb bbls....lb.	.44	.45	.44	45	.44	.45
Metasilicate, c-1, wks..100 lb.	2.65	3.05	2.65	3.25	2.85	4.00
Monohydrate, bbls.....lb.		.02½	....	.02½	.....	.02½
Naphthionate, 300 lb bbl...lb.	.52	.54	.52	.54	.52	.54
Nitrate, 92%, crude, 200 lb. bags c-1 NY .....100 lb.		1.26	1.26	1.31	1.185	1.73½
100 lb. bags lb .....ton		25.90	....	....	.....	.....
Bulk.....ton		23.90	....	....	.....	.....
Nitrite, 500 lb bbls spot....lb.	.07¼	.08	.07½	.08	.07½	.08
Orthochlorotoluene, sulfonate, 175 lb bbls wks.....lb.	.25	.27	.25	.27	.25	.27
Perborate, 275 lb bbls.....lb.	.17	.19	.17	.19	.17	.20
Phosphate, di-sodium, tech. 310 lb bbls.....100 lb.	2.20	2.40	2.00	2.40	2.00	2.75
tri-sodium, tech, 325 lb bbls.....100 lb.		2.50	2.15	2.50	2.15	3.20
Picramate, 160 lb kegs ....lb.	.69	.72	.69	.72	.69	.72
Prussiate, Yellow, 350 lb bbl wks.....lb.	.11½	.12	.11½	.12	.11½	.12
Pyrophosphate, 100 lb keg..lb.	.15	.20	.15	.20	.15	.20
Silicate, 60 deg 55 gal drs, wks .....100 lb.	1.65	1.70	1.65	1.70	1.65	1.70
40 deg 55 gal drs, wks .....100 lb.		.75	....	.75	.....	.75
Silicofluoride, 450 lb bbls NY .....lb.	.04½	.06	.04½	.06	.05½	.06¾
Stannate, 100 lb drums.....lb.	.31	.33	.18	.33	.17	.19
Stearate, bbls.....lb	.20	.25	.20	.25	20	.25
Sulfanilate, 400 lb bbls.....lb.	.16	.18	.16	.18	.16	.18
Sulfate Anhyd, 550 lb bbls c-1 wks.....lb.	.02	.02¾	.02	.02¾	.02	02¾
Sulfide, 80% crystals, 440 lb bbls wks.....lb.	.02½	02¾	.02½	.02¾	.02½	.02¾
62% solid, 650 lb drums 1c-1 wks.....lb.	.03	03½	.03	.03½	.03	.03½
Sulfite, crystals, 400 lb bbls wks.....lb.	.03	.03½	.03	.03½	.03	.03½
Sulfocyanide, bbls .....lb.	.28	.35	.28	.35	.28	.35
Tungstate, tech, crystals, kegs .....lb.	.65	.67	.57	.67	.60	.88
Spermaceti, blocks, cases.....lb.	.20	.21	.17	.22	.....	.....
Cakes, cases.....lb.	.21	.22	.18	.23	.....	.....
Spruce Extract, ord., tanks..lb.		.00¾	....	.00¾	.00¾	.01
Ordinary, bbls.....lb.		.01½	....	.01½	.01½	.01¾
Super spruce ext., tanks...lb.		.01½	....	.01½	.01½	.01¾
Super spruce ext., bbls...lb.		.01¾	....	.01¾	.01¾	.01¾
Super spruce ext. powd., bags .....lb.		.04	....	.04	.04	.04½
Starch, powd, 140 lb bags .....100 lb.	2.84	2.95	2.29	2.95	2.29	2.67
Pearl, 140 lb bags.....100 lb.	2.74	2.85	2.19	2.85	2.19	2.84
Potato, 200 lb bags.....lb.	.05½	.06	.03¾	.06	.03¾	.06
Imported bags.....lb.	.06	.06½	.04¾	.06½	.04	.06½

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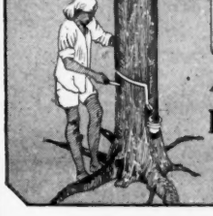

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HORACE M. DOBBINS

General Manager

	Current Market	1933 Low	1933 High	1932 Low	1932 High
Starch, Potato Soluble ....lb.	.08	.08½	.08	.08½	.08	.08½
Rice, 200 lb bbls....lb.	.07½	.08½	.07	.08½	.07½	.10
Wheat, thick bags....lb.	.06¼	.06¾	.05¾	.06¾	.06	.07
Thin bags....lb.	.10	.10¼	.09½	.10¼	.09½	.10
Strontium carbonate, 600 lb bbls wks....lb.	.07½	.07½	.07½	.07½	.07½	.07½
Nitrate, 600 lb bbls NY....lb.	.07¼	.07½	.07	.07½	.07	.07½
Peroxide, 100 lb drs....lb.		1.25	....	1.25	.....	1.25
Sulfur Brimstone, broken rock, 250 lb bag c-1....100 lb.		2.05	....	2.05	.....	2.05
Crude, f. o. b. mines....ton	18.00	19.00	18.00	19.00	18.00	19.00
Flour for dusting 99½%, 100 lb bags c-1 NY....100 lb.		2.40	....	2.40	.....	2.40
Heavy bags c-1....100 lb.		2.50	....	2.50	.....	2.50
Flowers, 100%, 155 lb bbls c-1 NY....100 lb.		3.45	....	3.45	....	3.45
Roll, bbls 1c-1 NY....100 lb.	2.65	2.85	2.65	2.85	2.65	2.85
Sulfur Chloride, red, 700 lb drs wks....lb.	.05	.05½	.05	.05½	.05	.05½
Yellow, 700 lb drs wks....lb.	.03½	.04½	.03½	.04½	.03½	.04½
Sulfur Dioxide, 150 lb cyl....lb.	.07	.07½	.07	.07½	.07	.07½
Extra, dry, 100 lb cyl....lb.	.10	.12	.10	.12	.10	.12
Sulfuryl Chloride....lb.	.15	.40	.15	.40	.15	.40
Sumac, ground....ton		50.00	....	....	....	.....
Talc, Crude, 100 lb bgs NY..ton	12.00	15.00	12.00	15.00	12.00	15.00
Refined, 100 lb bgs NY..ton	16.00	18.00	16.00	18.00	16.00	18.00
French, 220 lb bags NY....ton	18.00	22.00	18.00	22.00	18.00	22.00
Refined, white, bags....ton	35.00	40.00	35.00	40.00	35.00	40.00
Italian, 220 lb bags NY...ton	48.50	50.00	48.50	50.00	40.00	50.00
Refined, white bags....ton	50.00	55.00	50.00	55.00	50.00	55.00
Superphosphate, 16% bulk, wks....ton	7.50	8.00	6.50	8.00	7.00	8.00
Run of pile....ton	7.00	7.50	6.00	7.50	.....	.....
Tankage Ground NY....unit		2.60*	1.70	2.75*	1.30	1.50
Unground....unit		2.50	....	2.60	.....	.....
High grade f.o.b. Chicago.unit		2.00*	1.40	3.00	1.00	1.80
South American cif....unit		3.00*	....	2.50	1.80	2.25
Tapioca Flour, high grade bgs.lb	.03	.05	.03	.05	.03½	.05
Medium grade, bags....lb.	.03	.04	.03	.04	.03	04
Tar Acid Oil, 15%, drums...gal.	.21	.22	.21	.22	.21	.22
25% drums....gal.	.23	.24	.23	.24	.23	.24
Tartar Emetic, Tech ....gal.		.21¾	....	....	....	.....
U. S. P....gal.		.27	....	....	....	.....
Terra Alba Amer. No. 1, bgs or bbls mills....100 lb.	1.15	1.75	1.15	1.75	1.15	1.75
No. 2 bags or bbls...100 lb.	1.00	1.25	1.00	1.25	1.50	2.00
Imported bags....lb.	.01¼	.01½	.01¼	.01½	.01¼	.01½
Tetrachlorethane, 50 gal dr...lb.	.08½	.09	.08½	.09	.08	.09½
Tetralene, 50 gal drs wks....lb.	.12	.13	.12	.13	.12	.20
Thiocarbanilid, 170 lb bbl....lb.	.25	.28½	.25	.28½	.25	.28½
Tin....						
Crystals, 500 lb bbls wks...lb.	.35½	.36	.24	.37	.22	.25
Metal Straits NY....lb.		.46	.23	.48	.211	.24½
Oxide, 300 lb bbls wks....lb.	.50	.52	.27½	.52	.23	.26½
Tetrachloride, 100 lb drs wks ....lb.		.23	.126	.22½	.1420	.1457
Titanium Dioxide 300 lb bbl...lb.	.17¼	.19¼	.17¼	.19¼	.17¼	.21
Calcium Pigment, bbls....lb.	.06¼	.06½	.06¼	.06½	.06½	.07½
Toluene, 110 gal drs....gal.		.35	....	.35	.....	.35
8000 gal tank cars wks....gal.		.30	....	.30	.....	.30
Toluidine, 350 lb bbls....lb.	.88	.89	.88	.89	.88	.89
Mixed, 900 lb drs wks....lb.	.27	.28	.27	.28	.27	.32
Toner Lithol, red, bbls....lb.	.80	.85	.80	.95	.90	.95
Para, red, bbls....lb.		.80	....	.80	.....	.80
Toluidine....lb.		1.35	1.35	1.55	1.50	1.55
Triacetin, 50 gal drs wks....lb.	.32	.36	.32	.36	.32	.36
Trichlorethylene, 50 gal dr...lb.	.09½	.10	.09½	.10	.10	.10½
Triethanolamine, 50 gal drs...lb.	.35	.38	.35	.38	.35	.42
Tricresyl Phosphate, drs....lb.	.19	.26	.19	.26	.21	.26
Triphenyl guanidine....lb.	.58	.60	.58	.60	.58	.60
Phosphate, drums....lb.	.37	.39	.37	.39	.50	.65
Tripoli, 500 lb bbls....100 lb.	.75	2.00	.75	2.00	.75	2.00
Tungsten, Wolframite..per unit	10.00	11.00	10.00	11.00	10.00	11.75
Turpentine carlots, N. Y. dock bbls....gal.		.46	.46¼	.51½	.39	.47½
Savannah, bbls....gal.		.41	....	....	.....	.....
Jacksonville, bbls....gal.		.40½	....	....	....	.....
Wood Steam dist, bbls....gal.		.48	.42	.48	.42	.46
Urea, pure, 112 lb cases....lb.	.15	.17	.15	.17	.15	.17
Fert. grade, bags c.i.f....ton		82.60	....	82.60	.....	82.60
c. i. f. S. points....ton		82.60	....	82.60	.....	82.60
Urea Ammonia liq. 55% NH_3, tanks....unit		.96	....	....	.....	.....
Valonia Beard, 42%, tannin bags....ton		38.00	27.50	38.00	28.50	34.00
Cups, 30-31% tannin....ton		23.50	17.00	23.50	19.00	23.50
Mixture, bark, bags....ton		27.00	22.00	27.00	22.00	26.00
Vermillion, English, kegs....lb.	1.35	1.36	1.05	1.40	1.28	1.80
Vinyl Chloride, 16 lb cyl....lb.		1.00	....	1.00	.....	1.00
Wattle Bark, bags....ton		30.00	24.00	30.00	26.00	33.00
Extract 55%, tanks, bbls...lb.	.03¼	.03¾	.03	.03¼	.03	.06½
Whiting, 200 lb bags, c-1 wks ....100 lb.	.85	1.00	.85	1.00	.85	1.00
Alba, bags c-1 NY....ton		15.00	13.00	15.00	.....	13.00
Gilders, bags c-1 NY...100 lb.		1.35	....	1.35	.....	1.35
Wood Flour, c-1....bags	18.00†	30.00	18.00	36.00	.....	.....
Xylene, 10 deg tanks wks...gal.	.27	.29	.27	.29	.....	.29
Commercial, tanks wks...gal.		.26	....	.26	.....	.26
Xylidine, crude....lb.	.36	.37	.36	.37	.36	.37
Zinc Ammonium Chloride powd., 400 lb bbls....lb.	.04¾	.05	.04¾	.05	.....	5.75
Carbonate Tech. bbls NY..lb.	.09½	.11	.09½	.11	.09½	.11
Chloride Fused, 600 lb drs wks....lb.	.05	.05¾	.05	.05¾	.05	.06
Gran, 500 lb bbls wks....lb.	.05¾	.06	.05¾	.06	.05¾	.06
Soln 50%, tanks wks...100 lb.		3.00	....	3.00	2.25	3.00
Cyanide, 100 lb drums....lb.	.38	.39	.38	.39	.38	.39
Dithiofuroate, 100 lb dr....lb.		1.00	....	1.00	.....	1.00

*&10 †Depends upon grade

Current

Zinc Dust
Whale Oil

	Current Market	1933 Low	1933 High	1932 Low	1932 High
Zinc Dust, 500 lb bbls c-l wks ..... lb.	.071	.0705	.04¾	.07½	.041 0525
Metal, high grade slabs c-l NY ..... 100 lb.	.....	5 07	3.02	5 37	2.87 3.52
Oxide, American bags wk... lb.	.05	.06	.05	.06	.0485 .07
French, 300 lb bbls wks... lb.	.05¾	.11¼	.05¾	.11¼	.08¼ .11¼
Palmitate, bbls ..... lb.	.19	.20	.17½	.19	....
Perborate, 100 lb drs ..... lb.	.....	1.25	....	1.25	..... 1.25
Peroxide, 100 lb drs ..... lb.	.....	1.25	....	1.25	..... 1.25
Resinate, fused, dark, bbls. lb.	.05¾	.06½	.05¾	.06½	....
Stearate, 50 lb bbls ..... lb.	.17	.18	.15	.18	.16 .22
Sulfate, 400 bbl wks ..... lb.	.03½	.03½	.03	.03½	.03 .03½
Sulfide, 500 lb bbls ..... lb.	.13	.13½	.12	.13½	.12 .13½
Sulfocarbolate, 100 lb keg.. lb.	.21	.22	.21	.22	.21 .24
Zirconium Oxide, Nat. kegs... lb.	.02½	.03	.02½	.03	.02½ .03
Pure kegs ..... lb.	.45	.50	.45	.50	.45 .50
Semi-refined kegs ..... lb.	.08	.10	.08	.10	.08 .10

Oils and Fats

Castor, No. 1, 400 lb bbls.... lb.	.....	.09¾	.09¼	.10	.09½	.10¼
No. 3, 400 lb bbls ..... lb.	.09¾	.09	.08½	.09¼	.08¾	.10¼
Blown, 400 lb bbls ..... lb.	.12¾	.12¾	.11¼	.12¾	.11¼	.12¼
China Wood, bbls spot NY.. lb.	.076	.077	.04¼	.09¼	.05¼	.07¾
Tanks, spot NY ..... lb.	.071	.072	.04¼	.08½	.04¾	.06¾
Coast, tanks ..... lb.	.06¾	.07	.04¼	.08¼	.04¼	.06½
Coconut, edible, bbls NY.... lb.	.....	.10¾	....	.10¾	.....	.10¾
Ceylon, 375 lb bbls NY.... lb.	.04	.04¼	.04	.04¾	.04	.04¾
8000 gal tanks NY ..... lb.	.....	.03¾	.03	.03⅜	.02⅞	.03⅜
Cochin, 375 lb bbls NY.... lb.	.04¾	Nom.	.04½	.05¼	.04¾	.06
TanksN Y ..... lb.	.04½	Nom.	.04	.05	.03¾	.05
Manila, bbls NY ..... lb.	.04	.04½	.04	.04¼	.04	.05
Tanks NY ..... lb.	.02¾	.03	.03⅜	.03¾	.03¼	.04
Tanks, Pacific Coast..... lb.	.02⅞	.03¼	.02¾	.03⅜	.02¼	.03¼
Cod, Newfoundland, 50 gal bbls ..... gal.	No stocks		.19	.25	.21	.30
Copra, bags, N. Y. ..... lb.	.....	.017	.016	.019	.0175	.0235
Corn, crude, bbls NY ..... lb.	.06	.06¼	.05½	.07¾	.04½	.09
Tanks, mills ..... lb.	.04¼	.04¼	.02¾	.06¾	.02¾	.04½
Refined, 375 lb bbls NY... lb.	.07	.07¼	.06¼	.08¼	.05½	.07
Cottonseed, crude, mill Southeast & Valley ..... lb.	.04¼	.04½	.02⅝	.05	.02⅝	.04⅛
Texas ..... lb.	.....	.04½	....	....	....	.....
Degras, American, 50 gal bbls NY ..... lb.	.....	.02¼	.02½	.03	.02½	.04
English, brown, bbls NY.. lb.	.03¼	.04	.02⅝	.04	.02⅝	.04
Greases, Brown ..... lb.	.02	.02½	.02	.02½	.01⅝	.02¾
Yellow ..... lb.	.03½	.03⅝	.01¾	.03⅜	.01⅛	.03
White, choice bbls NY..... lb.	.04¼	.04⅝	.02½	.04⅝	.02	.04½
Herring, Coast, Tanks..... gal.	.....	.20	.11	.23	.....	.....
Lard Oil, edible, prime..... lb.	.....	.10½	.08½	.10¼	.08¼	.10
Extra, bbls ..... lb.	.....	.07½	.07½	.08¼	.05¾	.07¾
Extra No. 1, bbls ..... lb.	.....	.07½	.06	.08	.05½	.07
Linseed, Raw, five bbl lots... lb.	.....	.111	.08	.12	.061	.078
Bbls c-l spot ..... lb.	.....	107	.072	.11	.053	.07
Tanks ..... lb.	.....	101	.066	.104	.047	.064
Menhaden Tanks, Baltimore.gal.	.17	Nom.	.09	.15	.09½	.20
Refined, alkali bbl ..... lb.	.065	.071	....	....	....	.....
Tanks ..... lb.	.....	.061	....	....	....	.....
Light Pressed, bbls ..... lb.	.053	.....	....	....	....	.....
Tanks ..... lb.	.....	.049	....	....	....	.....
Neatsfoot, CT, 20° bbls NY... lb.	.....	.16¾	.11¾	.16¼	.11¼	.13½
Extra, bbls NY ..... lb.	.....	.07½	.06½	.08¼	.05¾	.07
Pure, bbls NY ..... lb.	.....	.14	.07½	.14	.07½	.09
Oleo, No. 1, bbls NY ..... lb.	.....	.06¼	.05	.06¼	.05⅜	.07
No. 2, bbls NY ..... lb.	.....	.06¼	.04¼	.06¼	.04¼	.06
Olive, denatured, bbls NY... gal.	.72	.75	.47	.75	.51	.65
Edible, bbls NY ..... gal.	1 60	1 75	1.30	1 75	1.25	2.00
Foots, bbls NY ..... lb.	.06	.06¼	.04⅜	.06¼	.04¼	.05
Palm, Kernel Casks ..... lb.	.04	Nom.	.04	.04¼	.035	.04⅜
Lagos, 1500 lb casks..... lb.	.04¼	.04¾	.02⅜	.04¾	.03	.05
Niger, Casks ..... lb.	.04¼	.04½	.024	.04½	.03	.03½
Peanut, crude, bbls NY..... lb.	.07	Nom.	.03½	.07	.02⅝	.04½
Refined, bbls NY ..... lb.	.08	.11	.08½	.11	.08¼	.09
Perilla, bbls NY ..... lb.	.10	.10½	.05	.10½	.03¾	.05¾
Tanks, Coast ..... lb.	.09	Nom.	.03½	.09½	.03½	.05
Poppyseed, bbls NY..... gal.	1.55	1.70	1.55	1.70	1.60	1.75
Rapeseed, in bond, bbls NY. gal.	.40	.43	.33	.43	.....	.....
denatured, drms, NY..... gal.	.65	.67	.34	.65	.....	.....
Red, Distilled, bbls ..... lb.	.07	.07⅜	.05¼	.07¼	.06¼	.07
Tanks ..... lb.	.....	.06	.05	.06	.05¼	.06
Salmon, Coast, 8000 gal tks. gal.	.19	Nom.	.11	.18	.11	.19
Sardine, Pacific Coast tks... gal.	.24	Nom.	.09½	.20	.09½	.17½
Sesame, edible, yellow, dos... lb.	.09½	.10	.09½	.10	.08½	.09½
White, dos ..... lb.	.10	.11	.10	.11	.10	.11
Sod, bbls NY ..... gal.	.....	.40	....	.40	.....	.40
Soy Bean, crude						
Pacific Coast ..... lb.	.....	Nom.	.032	.035	.02¾	.03½
Domestic tanks, f.o.b. mills, lb.	.....	.08	.027	.085	.03	.032
Crude, bbls NY ..... lb.	.086	.09	.04	.095	.03¾	.05
Refined, bbls NY ..... lb.	.091	.105	.04½	.106	.04½	.06
Sperm, 38° CT, bleached, bbls NY ..... lb.	.103	.105	....	....	.....	.....
45° CT, bleached, bbls NY.. lb.	.096	.098	....	....	.....	.....
Stearic Acid, double pressed dist bags ..... lb.	.09½	.10	.07½	.10	.07½	.09
Double pressed saponified bags ..... lb.	.09½	.10	.08	.10	.07	.08½
Triple, pressed dist bags.. lb.	.12½	.12¾	.10½	.12½	.10½	.11
Stearine, Oleo, bbls ..... lb.	.05½	.05½	.03½	.06½	.03¾	.06
Tallow City, extra loose..... lb.	.....	.03½	.02	.03¼	.02¼	.03¼
Edible, tierces ..... lb.	.....	.04¾	.03½	.05¼	.03¾	.04¼
Tallow Oil, Bbls, c-l NY... lb.	.05¾	.06	.05½	.06	.05½	.07⅛
Acidless, tanks NY ..... lb.	.....	.06¼	.05	.07¼	.06	.09
Vegetable, Coast mats..... lb.	.06	Nom.	.04½	.06	.06	Nom.
Turkey Red, single, bbls ..... lb.	.07½	....	.06¼	.07½	.06½	.09
Double, bbls ..... lb.	.12½	.13	.08	.13	.08	.11
Whale, ...						
Winter bleached, bbls, NY..lb.	.....	.072	....	....	.....	.....
Refined natural, bbls, NY..lb.	.068	.07	....	....	.....	.....

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CHEMIST—7 years research work in vegetable oils, sulfonation, emulsion for polishes, petroleum and fuels. Box 329 CHEMICAL MARKETS.

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"We"—Editorially Speaking

A protective paint for ship bottoms; an efficient insecticide against the boll weevil; practical gas masks useful in industry against hydrocyanic acid, carbon monoxide, and ammonia are some of the important peacetime developments credited to the work of the Chemical Warfare Service, a work which will be reviewed in detail by Captain Robert E. Sadtler in next month's issue of CHEMICAL MARKETS.

"This little pig went to market" became more than a well-worn nursery rhyme when on August 24 one hundred thousand pigs weighing between 25 and 100 pounds were sold to the government in Chicago under the processing arrangement. Don't ask us for the date to turn in obsolete or surplus chemical equipment. Our Washington correspondent has so far failed to tell us!

Points in the production of acid-resisting enamels are aptly given by Dr. Ludwig Stuckert whose article has been translated from *Die Chemische Fabrik*.

To effectuate the policy of Title I, of the National Industrial Recovery Act, the Independent Alcohol Consumers League of the chemical industry—familiarly known as the Park-lex group—have been writing a code of fair practice which contains stringent penalties against:

1. All kibitzers.
2. Cold hands.
3. Cold feet.
4. Female telephone calls.
5. All wild cards in high-low.
6. Home Sweet Home alibis.

The Code Committee is hopelessly split on what is fair competition in matching. This provision as originally drafted provides that after ten consecutive losses the loser may be excused for the evening, while a counter proposal is that one win in five and all bets are off. This last has been branded by the brain trust as nothing less than high class chiseling.

Tickets on the Irish Sweepstakes are not gambling according to a conservative alkali sales manager, who claims they are a sure thing—contribution or investment.

Economics is a popular subject these days and during the past few years there has accumulated interesting literature on the economic aspects of chemical manufacture and sale. In *Chimie et Industrie* L. M. Bernard has reviewed and summarized the principles laid down by the leading chemical economists of the different countries. Germany has made the most numerous contributions in this field, but the work of three good Americans Tyler, Haynes and Teeple—is reviewed. Translation of this article will appear next month.

The manufacturing processes of acetylene carbon black described by Charles Kaufmann, which have been abstracted from *Canadian Chemistry and Metallurgy*, are very pertinent and interesting and contain some very valuable information.

Muscle Shoals has been eclipsed. An official Dutch report says: "a valuable deposit of superphosphate has been located in the South Keboemen district of the Residency of Kedoe, Central Java," and our British contemporary *The Fertilizer Journal* points out this is doubtless close by a sulfate of ammonia mine.

Mathieson's Allen is credited with saying, "I used to set aside Tuesdays and Thursdays from two to three for the consideration of proposals to merge: now I keep forty hours a week clear for the consideration of codes."

CHEMICAL BUSINESS

It is utterly inappropriate that we should praise a new book which has just been published by D. Van Nostrand & Co., 250 Park Ave., New York (Price, $3.00: advt.) but we cannot see why we should not quote what a du Pont Director and President of the American Chemical Society says about it:

"Chemical Economics by Williams Haynes, the publisher of Chemical Markets, covers the field in a way which makes it of great interest and value to everyone interested in the chemical industry, particularly to young students of chemistry and to men connected with the industry."
—Charles L. Reese.

One of many similar reasons why we do not subscribe to Heywood Broun's lamentations that editorial writers should unionize:—

"Permit us in closing to compliment you on the very excellent character of your magazine CHEMICAL MARKETS and of your CHEMICAL GUIDE-BOOK."

Henry T. Neumann Laboratories, Inc.

"Chemical Markets Hold Steady:" headline in the O. P. D.—steady and how, this issue carries more advertising than any since October, 1932.

The catalytic and absorptive properties of aluminum oxide in a careful survey abstracted from *The Chemical Age* point the way to many striking new uses for this product.

From a revered reader in St. Louis we have the following encouraging message: "CHEMICAL MARKETS is a unique publication. I have read every issue since March 1933 and I have not yet found the name of Mrs. Franklin Delano Roosevelt in your highly interesting columns. Keep up the good work!"

We wish mightily that a stenographer could have been present at the meeting of the Chemical Distributors in New York on the eighth to have taken down verbatim the stinging rebuke administered to salesmen who work for the customer. His philippic was a masterpiece of enthusiasm and seasoned conviction. Hail to the veteran!

At that same meeting Curtis Burnett (American Oil & Supply, Newark, N. J.), when the discussion of the terms of fair competition became very warm restored order by reminding the assembled jobbers: "Gentlemen, the Millenium has not yet come, but four o'clock has." We reckon that just about cinched his election as president.

We called at a large lacquer plant recently to see the president. Our entrance was momentarily, but effectually, blocked by an office boy who wanted to know if we were a salesman, bill collector or friend. We decided we might be all three—we often are—and said as much. "Well," shot back the boy, "he's in conference. He's out of town. Step right in."

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